

Argentina: Trying to Make Sense of the Financial Tango

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Abstract

The paper discusses and revisits some of the most popular stories behind the 2001 financial crisis in Argentina, i.e. the prolonged overvaluation of the peso owing to the Currency Board arrangement, the lack of fiscal adjustment, and the negative external environment which triggered a “sudden stop” of capital inflows. In doing so, the paper surveys and attempts to make sense of the contradictory theories and explanations surrounding these different stories. It also tries to shed some light on one possible missing link, that is the growth performance during the Convertibility period. Finally, the paper discusses some important policy issues pertaining to the effects of global financial integration, such as capital account opening, exchange rate policies, alternatives to debt financing and the role of the international financial institutions. The central message is that the very nature of the Argentine crisis was not fundamentally different from the pattern of inconsistent macroeconomic policies which triggered many of the speculative attacks against the Peso in the 1970s and the 1980s. Although the problem was for once not monetary, the time inconsistency problem of the exchange rate policy followed between 1991 and 2001, together with the lack of nationally coherent fiscal and development policies, led to a classic debt solvency trap. From this perspective, the 2001 default does not provide for a new “type” of crisis, although crisis management. This being said, the real sector of the economy during the 1990s is certainly one of the most overlooked elements in the crisis, and certainly led to overoptimistic expectations about the capacity of the Argentine economy to rebound.

JEL classification: E44, E62, F14, F31, F34, H3, H63

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List of Acronyms

EIU	Economist Intelligence Unit
IFS	International Financial Statistics
IIF	International Institute for Finance
IMF	International Monetary Fund
INDEC	Instituto Nacional de Estadística y Censos de la República Argentina
LAC	Latin American Countries
MECON	Ministerio de Economía y Producción de la República Argentina

1. Introduction: Setting the Stage

For long a subscriber to currency and banking crises and an experienced practitioner of hyperinflation, Argentina seemed at last to have achieved a remarkable level of price stability and growth in the 1990s, prompted by the adoption of a rigid currency board system (the so-called “convertibility plan”) in 1991 that enforced the 1-to-1 peg of the peso to the dollar. Trade protection was substantially lowered, an ambitious privatization program was implemented, and the economy was growing rapidly: Argentina was made out to be a model of the paying-off of market reforms. Considerable amounts of FDI flowed into the country, most specifically from privatizations, and Argentina was able to float large issues of medium and longer maturity debt in world credit markets at comparatively modest spreads over US treasuries. Even better, for the first time in Argentina’s convoluted postwar financial history, the 1995 banking crisis which followed the “Tequila” crisis in Mexico, did not result in a peso devaluation. The currency board resisted the shock, as well as the spillover effects of the East-Asian and Russian crises in 1997-1998. Even after the devaluation of the Brazilian real in January 1999, the Argentine economy seemed to be able to cushion the shock. However, the tide shifted in 2001 with the entire collapse of the financial sector, pushing the country into external debt default. Domestic savings have been confiscated through fierce “pesofication”, and the population is taking the hit. But Argentina’s story remains puzzling: how can a country with a 10-year track record of price stability, virtually no inflation, a “reasonable” debt ratio of 54% of GDP (by Maastricht standards) and seemingly tolerable fiscal and current account deficit levels, hit the wall so quickly ? How can a country, which had been under close IMF scrutiny since the beginning of the currency board arrangement, all of a sudden fall in disgrace ?

The case of Argentina has been discussed at large by scholars and experts, but no consensus has emerged so far. This is hardly surprising. After all, the origins of the East-Asian crises are still harshly debated by economists in the sensitive context of globalization. Expectations of further currency crises were plausible after the East-Asian and Russian episodes, and Argentina’s meltdown was not exactly a surprise; it followed instead the path of a chronicle of a death foretold, and despite warnings, corrective measures, international expertise and advice, the inevitable indeed happened. Trying to make sense of what went wrong in Argentina, when and why, is thus needed to update our understanding of emerging market vulnerability and crisis management.

Many “explanations” or “stories” circulate with respect to this issue. Some may be complementary, but have different policy implications. For some, the currency board is to be blamed for prolonged overvaluation of the peso, hindering competitiveness of Argentina’s exports. For others, the lack of fiscal adjustment and the IMF’s unusually lax stance about it, made the debt dynamics unsustainable in the face of prolonged recession. Additional stories include a negative external environment, leading to a “sudden stop” of capital inflows and ultimately to self-fulfilling expectations about the collapse of the currency board system. The paper attempts to revisit these differing stories in trying to clarify the various element leading to the crisis. It is organized as follows: the second

section provides a general assessment of the currency board system and discusses the real exchange rate overvaluation issue; section III discusses the issue of fiscal adjustment in the lead-up to the crisis and during the crisis and presents some debt sustainability analysis; section IV discusses the “missing link” in the debt sustainability issue, i.e. the growth puzzle in Argentina; section V discusses some important policy recommendations pertaining to the effects of global financial integration, such as capital account opening, exchange rate policies, alternative to debt financing and the role of the international financial institutions. Section VI offers some final comments.

2. The Currency Board System: Boon or Curse ?

a. Main Achievements and Challenges

The monetary arrangement introduced by President Carlos Menem’s economic team in April 1991 was, in the words of HANKE & SCHULER [2002], a “*mixture of currency board and central banking features*”. The Argentine’s peso was linked to the US dollar at a fixed rate of 1 to 1, the stock of currency issued was tied to the stock of foreign exchange reserves held by the Central Bank, and full convertibility of current and capital account transactions was established. However, the Central Bank retained some latitude for discretionary policies, the most obvious being the ability to alter the monetary base by transacting in Argentine government debt². Beyond the beauty contest associated with the “purity” of the currency board arrangement, the parity between the peso and the US dollar, which was enshrined in the Constitution, was a major psychological breakthrough for a country experiencing chronic hyperinflation episodes. By the same token, the Convertibility plan fully recognized the widespread dollarization of the economy as “a fact of life” which came as a legacy of the hyperinflation experiences. Both the peso and the US dollar circulated as legal tenders, and the dollarization ratio, depicting the ratio of foreign currency deposits to broad money, rose to 63% at the end of 2001 from 35% in early 1991. This alone explains the choice of the US dollar as the reference currency, although the US is not Argentina’s major trade partner. An increase in dollarization is usually associated with a confidence crisis in the national currency. Yet in Argentina, dollarization picked up *after* a successful price stabilization and reflected mostly portfolio shifts from cross-border peso deposits to dollar deposits in the domestic banking system, which suggests an increase in confidence in the national economy³.

The strong monetary anchor provided by the Convertibility plan worked wonders in successfully curbing inflation. By 1995, Argentina’s inflation rate was converging towards that of the US, after recording annual rates as high as 3000% prior to the currency board. US inflation rates were even higher than Argentine rates during the later

² Some portion of the total reserves of the Central Bank was held in the form of government bonds denominated in foreign currency. This feature, coupled with an usually high maximum ratio of foreign reserves to monetary liabilities set to 133%, made Argentina’s convertibility system a *de facto* unorthodox currency board.

³ See BALINO, T., BENNET A, BORENZSTEIN, *Monetary Policy in Dollarized Economies*, IMF Occasional Paper #171, 1999, pp.7-8.

part of the 1990s. This success, coupled with aggressive liberal reforms such as slashing trade barriers and a large-scale privatization program, contributed to the restoration of investor confidence and placed the country back on the growth track. Between 1991 and 1995 –during the Convertibility Plan “honeymoon years”- real GDP grew at an average annual rate of 8%, and after taking a hit from the Mexican crisis in 1995, the economy grew again at an average annual rate of 6% until 1998. But since 1999, the economy fell into a severe recession which was never reversed and ultimately led to the financial collapse of Argentina at the end of 2001.

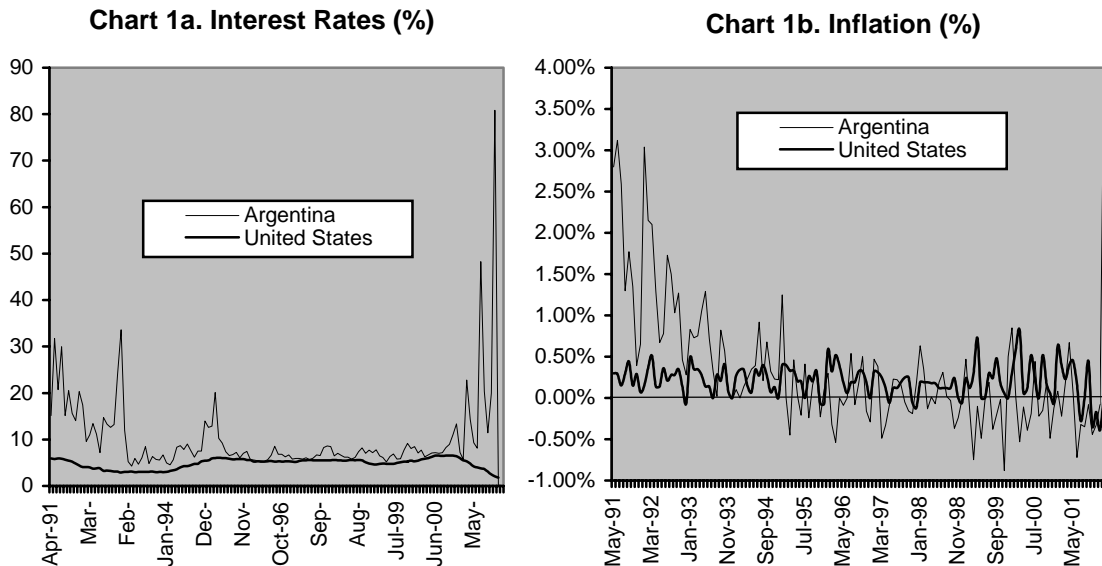
Argentine and US interest rates converged relatively rapidly despite some volatility in 1992 –when there was a speculative attack on the peso- and in 1994-95 following the Tequila crisis, but remained remarkably stable during the East-Asian crisis in 1997-98. This does not mean that there was no spread left. In fact, domestic lending interest rates have tended to remain far above equivalent US dollar rates, owing to a combination of high administrative costs stemming from the low monetization of the economy (29% of GDP in 2001), inefficiencies of the payment system, credit risk and sizable provisioning expenses associated with non-performing loans, and exchange rate risk premium reflecting concerns about the viability of the Convertibility plan⁴.

One of the additional successes induced by the Convertibility plan and the associated credibility was Argentina’s ability to become an important player in international capital markets. Thanks to capital account liberalization, international bonds issues and foreign direct investments have been important sources of capital flows into Argentina from 1992 to 2001, contributing steadily to the financing of the country’s external current account deficits⁵, together with other borrowing instruments such as bank loans, official and multilateral loans and trade credits. Thanks to high domestic interest rates, combined with low interest rates in the US and a comprehensive privatization program, Argentina was able to rapidly build up reserves from attracting large capital flows. As a result, foreign exchange reserves rose continuously until 1999, when they reached about US\$ 23 billions (see Table 1 below). US\$ 96 billion in international bonds were placed on a gross basis by Argentina from 1991 through 2001, with the public sector accounting for 75% of the total. The amounts picked up especially after 1996, with the average maturity being 5 years prior to 1996 and 10 years prior to 2001. Interestingly, international bonds placements were relatively unaffected by either domestic events or by international capital markets turbulence (e.g. East-Asian and Russian crises). These spectacular developments contributed to Argentina’s fast economic expansion during the 1990s as well as to the building up of a sizable external debt⁶, a sign that the “*Convertibility Plan’s high return on growth depended on external borrowing*” as put by WISE & ROETT [2000].

⁴ For an econometric investigation of intermediation spreads in Argentina, see CATAO, L., “Intermediation Spreads in a Dual Economy: Argentina in the 1990s”, *IMF Working Paper* WP/98/90, June 1998.

⁵ Between 1992 and 1999, net FDI inflows covered the equivalent of 60% of the current deficit. The historical high was reached in 1999, when net FDI covered the equivalent of almost 90% of the deficit.

⁶ As shown in Table 1, the debt ratio to GDP doubled from 1993 to 2001, and the accumulation of new debt has been impressive during the last 6 years of the Convertibility Plan.



These impressive financial developments should not hide the fact that Argentina's currency board system came under strain at several occasions during the last decade, resulting in substantial capital flow reversals and major turbulence in the banking system (see Table 2). The "Tequila crisis" that hit Mexico in 1994 severely affected Argentina, as investors started to shy away from emerging markets. Through financial market linkages, Argentina experienced a major liquidity crisis. As the banking system lost 17% of its total deposits in less than 6 months, the Central Bank lost 35% of its liquid international reserves. Prime interest rates soared, creating a severe credit crunch and resulting in numerous bank failures. This episode proved extremely costly for the Argentine economy, which suffered from a major recession in 1995. As Chart 2 below shows, the currency risk (proxied by the spread of peso over US dollar bonds) was particularly high at the time of the Tequila crisis, and reached comparable levels only in the later part of 2001. The subsequent sharp recovery of the economy was short-lived as East-Asia entered into massive financial turmoil in 1997, soon to be followed by the Russian default in August 1998. Both crises resulted in a substantial reserve loss, but the magnitude of the costs is in no way comparable to the damage inflicted by the Tequila crisis. These successive crises have led to very high interest policies in order to prevent capital flight, which clearly constrained domestic investment. The last blow came in January 1999, when Brazil, Argentina's major trading partner, devalued the Real. The devaluation fostered fears about the induced loss of competitiveness of Argentine exports and soured trade relations between the two countries, particularly in the automobile sector. But apart from negative spillover effects on the real sector of the economy, the most serious impact of the Brazilian devaluation was to shake for the first time the intangibility of the Convertibility Plan, as rumors surfaced about moving towards greater exchange rate flexibility. This was immediately taken into account by financial markets, as spreads started to increase again. In retrospect, it appears that the economic recession in Argentina following the Brazilian devaluation literally pushed the country off track,

and inexorably led to the crisis, as growth failed to resume and capital market confidence vanished for good.

Table 1. Macroeconomic and Financial Indicators, 1991-2001

	1991	1993	1995	1997	1999	2001
Current account balance (US\$ bn)	-0.6	-7.8	-4.9	-12.0	-12.3	-4.4
Capital account balance (US\$ bn)	-7.3	11.0	2.9	15.6	14.1	-7.5
International reserves (US\$ bn)	5.8	11.8	9.8	16.3	22.8	14.8
Equity Investment	2.3	36.3	5.6	6.4	11.2	3.6
Foreign Direct Investment (US\$ bn)	2.4	2.6	3.8	5.5	22.6	3.0
Portfolio investment (US\$ bn)	-0.03	33.7	1.8	0.9	-11.4	0.6
International bonds issues	1.6	6.2	7.7	19.1	16.9	10.3
Public sector	0.4	2.3	5.0	12.4	13.2	8.3
Private sector	1.2	3.9	2.7	6.7	3.8	2.0
Total Public debt (US\$ bn)	46.9	56.6	67.2	74.8	84.6	87.8
Total Private debt (US\$ bn)	15.3	18.6	31.7	49.9	59.9	59.8
Memorandum:						
Real GDP Growth (%)	10.3	5.7	-2.3	8.1	-3.4	-4.1
Total external debt (% GDP)	35.0	27.7	39.2	44.7	52.6	53.8

Source: IMF, MECON, IIF

Table 2. External Shocks and Argentina's Real and Financial Sectors, 1994-1999

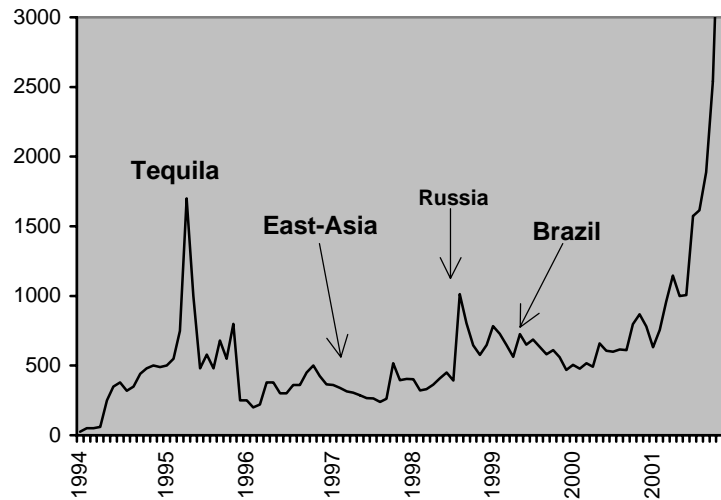
	Tequila crisis	East-Asian crisis	Russian Crisis	Brazil's Devaluation	Real
Reserves loss (% change)	-35.6	-4.9	-5.4		-10.7
Total deposits (% change)	-20.4	3.3	1.8		2.9
Capital flight (net, US\$ bn) *	-9.8	-6.7	-2.7		5.3
Industrial production (% change)	-5.3	7.5	1.2		-5.8

* Represents the degree of under/over funding of the current account deficit. A negative number depicts capital leaving the country

Source: IMF, EIU, WISE & ROETT [2002]

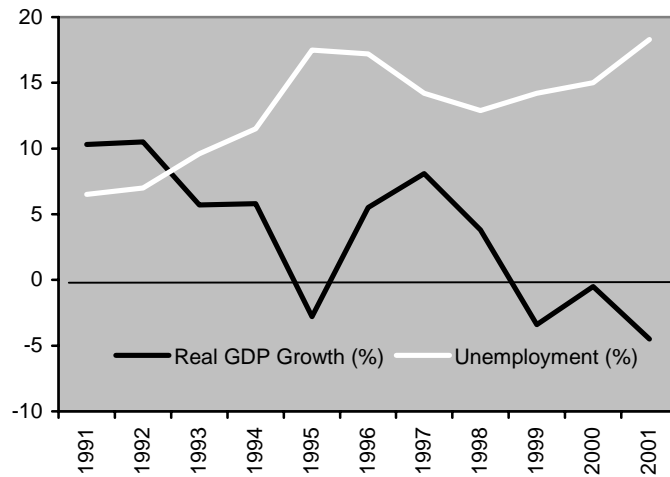
Conclusion - From the macroeconomic performance of Argentina during the 1990s, by the convergence of both prices and interest rates to international levels, and by the ability of the arrangement to go through the turbulences of all the financial crises which affected markets between 1994 and 1999, the Convertibility plan represented a successful exchange rate stabilization example. However, the external adjustment mechanism inherent in any rigid fixed exchange system in the presence of capital mobility induced large output shocks and rising unemployment. As shown in Chart 3, apart from a timid recovery in 1996-97, unemployment has been rising steadily since the launch of the Convertibility Plan, reaching 18% of GDP at the start of the crisis. With the benefit of hindsight, it would appear that the tradeoff between price stability and growth became increasingly questionable after the Mexican Peso crisis. Indeed, the relevance of the major premise of the currency board, namely that monetary shocks were predominant in Argentina, was challenged in the face of large commodity price swings and the spillover effects of financial crises in other emerging market economies.

Chart 2. Spreads of Peso over Dollar Bonds
(Basis points)



Source: Bloomberg

Chart 3. Real GDP Growth and Unemployment
(%)



Source: IMF

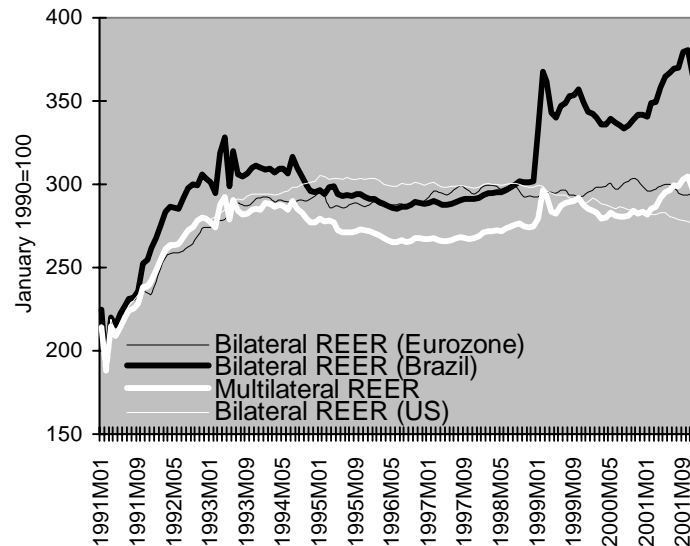
b. Currency Overvaluation and Competitiveness Problems: Myth or Reality ?

In all nominal exchange rate stabilization episodes, the uninvited guest is sooner or later competitiveness problems associated with a progressive overvaluation of the real exchange rate. This, in turn, affects the trade performance of the country. This classic problem occurred with all currency board arrangements⁷ in the past. In the case of

⁷ See GHOSH, A., GULDE, A.R., WOLF, C., "Currency Boards: The Ultimate Fix?", *IMF Working Paper* WP/98/8, January 1998, pp.12-14.

Argentina, the overvaluation story deserves close scrutiny, not least because some authors (HANKE & SCHULER [2002]) have challenged its accuracy. One obvious starting point in the analysis is to look at the real effective exchange rate (REER): as shown in Chart 4, the (multilateral) real trade weighted exchange rate initially appreciated about 50% from 1991 to June 1993, reflecting much higher (yet decreasing) inflation rates in Argentina than abroad and Balassa-Samuelson effects⁸; then, during a second phase ranging from July 1993 to July 1996, there was a 13% depreciation of the real exchange rate, mostly reflecting the loosening of the US monetary policy and the problems of Brazil's Real Plan; finally, during a last phase starting in August 1996 and ending in December 2001, the real exchange rate appreciated by 15%, reflecting the sizable appreciation of the US dollar against major other currencies (including the EURO after the year 2000) as well as Brazil's devaluation in January 1999⁹. The sizable effect of the Real devaluation on the bilateral REER with Brazil is also shown in Chart 5, together with gradual depreciation of the bilateral REER with the United States during the same period.

**Chart 4. Real Effective Exchange Rates
(January 1991-December 2001)**



Source: Authors' Calculations

Note: the REER is calculated using the IMF methodology, i.e. $REER = \frac{CPI_{ARGENTINA}}{E \cdot \sum_i CPI_{Trade\ Partner\ i}}$.

Therefore, a rise in the index represents an appreciation of the real effective exchange rate, i.e. a rise in the price of non-tradables relative to the price of tradables.

⁸ The Balassa-Samuelson effect describes the role of differential productivity growth rates in the tradable and the non-tradable sectors in real appreciation of the real exchange rate. This typically happens in countries undergoing price stabilization and trade opening.

⁹ See ESCUDE, G., GABRIELLI, M., SABBAN, V., *Evolución del Tipo de Cambio Real Multilateral de Argentina en los últimos 10 años*, Nota Técnica #11, Banco Central de la Republica Argentina, Octubre del 2001.

It is important, however, to distinguish the share of the real appreciation that is justified by changes in fundamentals from the share signaling a competitiveness problem, and hence, a real overvaluation problem. Typically, competitiveness issues are likely to arise when real appreciation is associated with a serious loss of growth and high external imbalances. As shown in Table 3 below, Argentina experienced a sharp deterioration in its foreign trade balance as economic growth picked up, and the trade balance exhibited a countercyclical behavior, being negative during the high growth year and becoming slightly positive during the recession years. By contrast, current account deficit figures suggest an increasingly serious situation after 1996, crossing the sustainability general rule-of-thumb of 4-5%, especially because the economy entered into recession.

Table 3. External balance and Real Growth, 1991-2001

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Export volume (% change)	-2.2	-1.5	7	17.4	25.1	6.6	15	11.6	-0.7	2.8	4.5
Export price (% change)	-0.7	3.6	0.2	2.9	5.7	6.5	-3.5	-10.4	-11.2	10.3	-3.5
Export value (% change)	-3.1	2.2	7.2	20.7	32.4	13.6	11.0	0.0	-11.8	13.3	0.9
Import volume (% change)	111.7	83.5	15.5	28.9	-13	19.8	31.1	8.7	-13.9	0.7	-17.0
Import price (% change)	-3.9	-2.1	-2.2	1.4	5.4	-1.2	-2.3	-5.1	-5.6	1.2	-2.9
Import value (% value)	102.0	79.7	12.9	28.6	-6.8	18.1	28.1	3.1	-18.8	1.9	-19.0
Trade balance (% GDP)	1.9	-0.6	-1.0	-1.5	0.8	0.6	-0.7	-1.0	-0.3	0.9	2.8
Current account balance (%GDP)	-0.4	-2.4	-3.0	-4.3	-2.0	-2.4	-4.2	-4.9	-4.2	-3.1	-1.6
Real GDP Growth (%)	10.3	10.5	5.7	5.8	-2.8	5.5	8.1	3.8	-3.4	-0.5	-4.5

Source: IMF

In fact, the trade deficit of the 1990s reflected the much lower growth in export volumes relative to import volumes, although the high volatility of both exports and imports must be noted. Four factors account for this trend:

-*First*, Argentine exports were in fact extremely sensitive to world commodity prices; as commodity prices fell after 1996, exports stalled after 1998 and never managed to recover their earlier dynamism (the terms of trade correlation with exports prices is shown in Chart 5 below).

-*Second*, exports proved to be highly elastic not only to net aggregate investment but to domestic consumption as well. The role of domestic demand is also evident on the import side, as evidenced by the pro-cyclical behavior of imports. This suggests *inter alia* that a sizable share of the export capacity generated by gross capital formation was systemically crowded out by domestic consumption, while imports were sensitive to the domestic business cycle, thereby indicating that domestic demand had a serious impact on the trade balance¹⁰.

-*Third*, manufacturing exports have been highly sensitive to the level of economic activity in MERCOSUR countries, as well as to relative price trends with those countries. In particular, growth in Brazil has been a key determinant for Argentine exports, as

¹⁰See CATAO, L., FALCETTI, E., "Determinants of Argentina's External Trade", *IMF Working Paper WP/99/21*, September 1999, p.31.

evidenced by Chart 6. This comes from the system of government incentives and bilateral agreements which lowered tariff rates for key industries (e.g. automobiles) and tied export of these products to partner country's imports of a similar good, with a view to keeping bilateral trade roughly in balance¹¹.

-*Fourth*, Argentine exports have been shown to be responsive to unit labor costs, which measure the relative price of exports. This is hardly surprising since in a fixed exchange rate setting, the only way to increase the profitability of tradables is to lower the price of non-tradables, which requires downwards nominal price and wage adjustment. Unfortunately, as shown in Chart 7, the relative price of tradables, measured by the ratio of consumer prices (CPI) to producer prices (PPI), has followed an erratic course and ended up at the same level in December 2001 as in 1994. When the relative price of tradables is based on the various components of the CPI and of the Wholesale Price Index, the picture is even more dramatic, showing a steady decline from 1994 to 2001. The common message of these various measures is not fundamentally different, however, and confirms that *non-tradable prices failed to decline over time*. For the most part, this reflects significant labor market rigidities prevailing in Argentina such as strong union power and collective wage bargaining, rigid labor regulations including high social contribution from employers and unrealistically heavy severance payments¹². Thus, labor costs were notoriously high and were an important element behind the so-called "*Argentine extra cost*"¹³. A similar picture emerges when looking at productivity estimates. Following the structural measures introduced with the Convertibility plan, labor productivity increased steadily and grew 4.5% from 1991 and 1995, with the most spectacular changes intervening in the energy, utilities and financial services sectors. Yet, productivity growth was virtually nil between 1996 and 2000, averaging 0.4%¹⁴, an issue that will be explored further in section IV.

Finally, the mirror effect of the continuing external imbalances in Argentina was the dramatic decline in the net foreign asset position, as shown in Chart 8. All these elements (i.e. growing external imbalances, lack of relative price adjustment, absence of productivity growth) *tend to suggest that the overvaluation of the peso became an issue only between mid 1996 and 2001*, i.e. during the third period of the real exchange rate trend identified above.

¹¹ CATAO & FALCETTI, *op.cit.* p.7. Note that YEASTS [1997] went further in outlining the trade-diversion aspect of the MERCOSUR framework, especially in capital-intensive sectors, but other studies (NAGARAJAN[1998]) point to less clear-cut results.

¹² In 1999, taxes on labor as a proportion of total payroll payments were above 40% and were higher than the average of both industrialized and Latin American economies.

¹³ *Argentina: the labor market*, Deloitte & Touche, October 2000.

¹⁴ *The McKinsey Quarterly*, #2, 2002. For TFP calculations, see also LANTERI, L. "*Fuentes de crecimiento en la Argentina y en los países recientemente industrializados del este del Asia. ¿ Podría pensarse en un milagro del crecimiento económico Argentino?*", Documento de Trabajo #6, Banco Central del la Republica Argentina, 1999.

Chart 5. Export Prices & Terms of Trade
(Index, 1993=100)

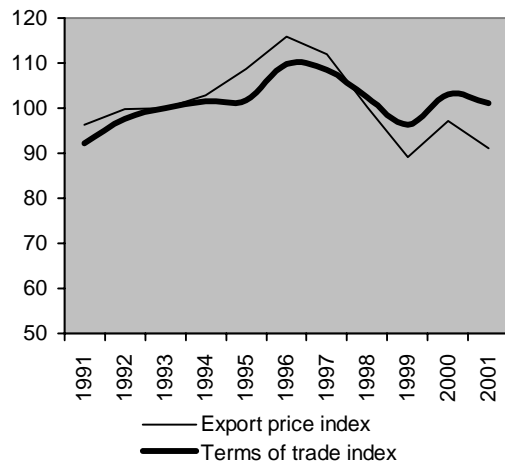
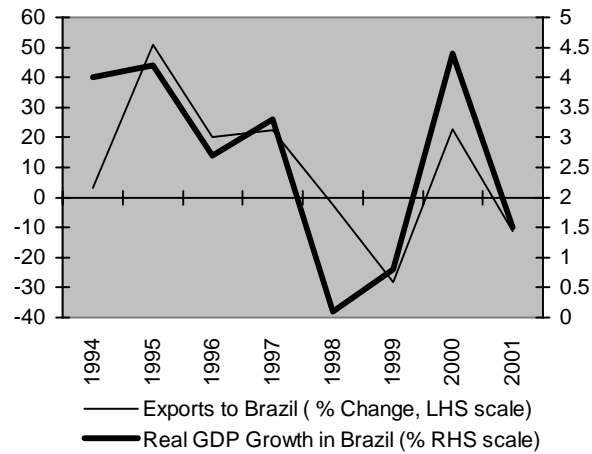


Chart 6. Exports from Argentina to Brazil
(1994-2001)



Source: IMF, Banco Central de la Republica Argentina, MECHÓN

Chart 7. Relative Prices

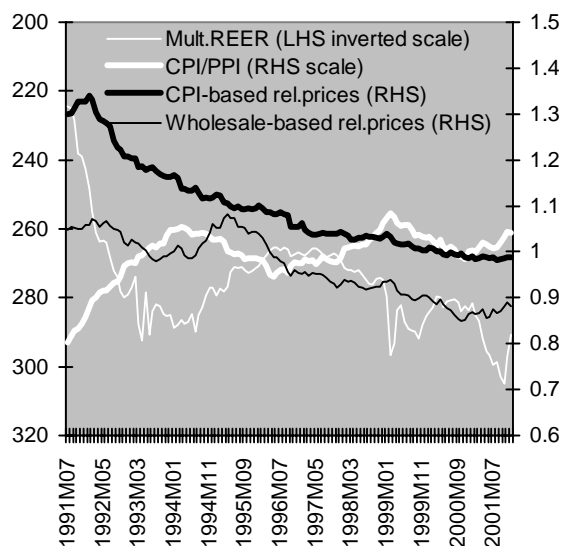
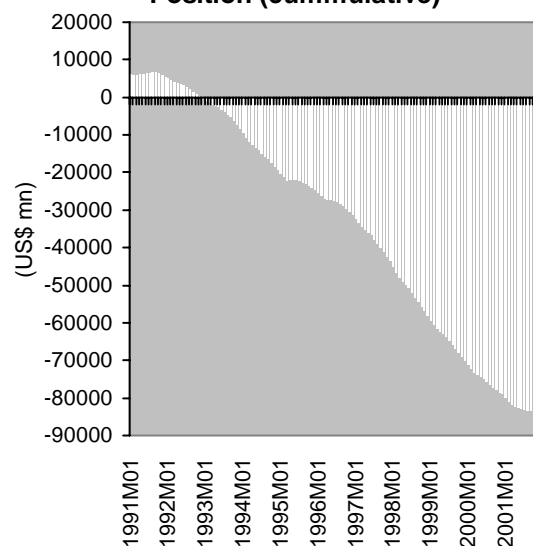


Chart 8. Net Foreign Asset Position (cummulative)



Source: Author's Calculations based on INDEC, MECON, IFS statistics and Chart 4.

Note: The CPI-based relative price is defined as the ratio of tradable to non-tradable goods and services listed in the CPI index¹⁵.

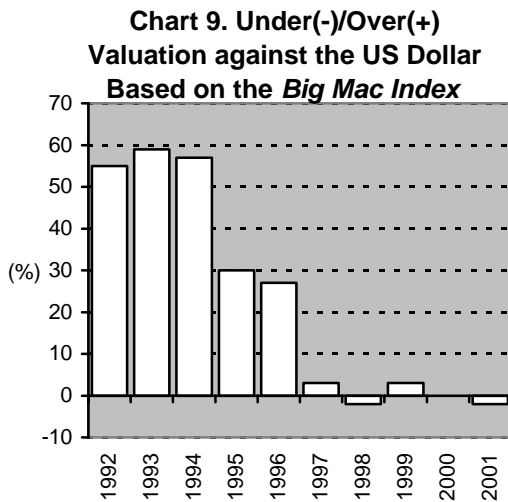
The wholesale-based relative price is the ratio of imported to domestic wholesale prices.

Net foreign assets are proxied by (cumulative) current accounts positions.

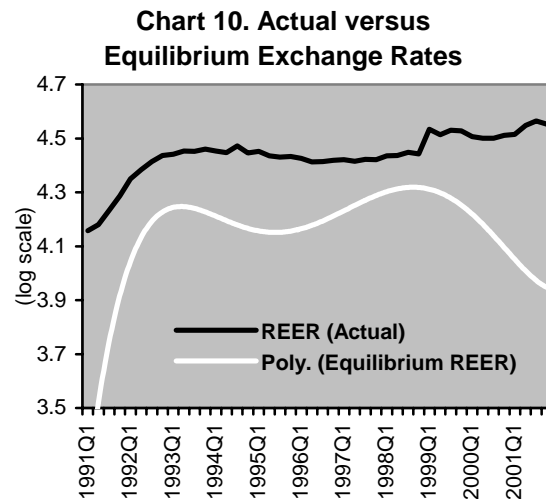
Although the above evidence supports convincingly the overvaluation story, HANKE & SCHULER [2002] have actually argued that the Peso was slightly *undervalued* in 2001 against the US Dollar, using the notorious *Big Mac Index* published by *The Economist* (Chart 9). Accordingly, the Peso seemed to be overvalued in the first years of the currency board

¹⁵ Non-Tradables are assumed to include *Housing and Related Services, Transport & Communications, and Education*. These three categories are worth 34% of the CPI index. Tradables are assumed to include *Food & Drinks, Clothing, Housing Equipment & Furniture, Medical Services & Supplies, Leisure Goods & Services and Miscellaneous services*.

arrangement, but not during the last five years. This interpretation is extremely debatable, however, due to the inherent limitations of this index, which builds on the purchasing power parity theory (PPP). As it is well known, absolute PPP is supposed to hold in the long run only, and rests on restrictive assumptions. Furthermore, departures from PPP in the short run are common, owing to a various factors including the existence of barriers to trade (tariffs, taxes and transportation costs), the inclusion of non-traded elements in the price index used, and pricing to market. In the specific case of Argentina, it is intuitive to think that the decisive element of the puzzle is the existence of non-traded elements in the cost of a “Big Mac”, and in particular the unusually low cost of labor in the hotel and restaurant sector, owing to the widespread use of undeclared workers. As shown by PAKKO & POLLARD [2003], differences in “Big Mac” prices across countries ultimately reflect differences in net hourly wages, thereby suggesting that deviations from PPP are driven by the Balassa-Samuelson effect. Further evidence of deviations from PPP can also be detected in estimating a model of equilibrium exchange rate. On the basis of a simple two goods/two countries model, where the real equilibrium exchange rate clears both internal and external balances, Annex II presents some results suggesting a long term relationship between the real exchange rate, relative prices, real commodity prices, net foreign assets and the fiscal balance. Decomposing this relation between permanent and transitory components, the results tend to show that the final decoupling of the real exchange rate compared to its “equilibrium value” took place between 1999 and 2001 (Chart 10). The overvaluation implied by the gap between the actual and the equilibrium exchange rate was of 20% at the end of 2001. This line of analysis of also consistent with the works of ALBEROLA *et alt.* [2003], who carry out a similar exercise over a longer time period with a slightly different model, and who find an even larger overvaluation at the end of 2001¹⁶.



Source: *The Economist*



Source: Author's calculations

Note: the Equilibrium REER depicted in Chart 10 is a *polynomial trend line* of the model-based Equilibrium REER estimated in Annex II.

¹⁶ See Annex II for a discussion of the results and of the differences between the two approaches.

Thus, there is little doubt that a real exchange rate misalignment developed during the last five years of the Convertibility plan, and that this contributed to Argentina's competitiveness problems. However, it is worth pointing out that the root of Argentina's competitiveness problems was not only the overvalued currency. A country's comparative advantage depends not only on price and cost competitiveness, but also *nonprice competitiveness*, such as technological innovation, investment in physical and human capital, and service-related factors. In this respect, the picture was not in favor of Argentina, as the country's generally good education system –even if is skewed towards higher education- was counterbalanced by very weak technological innovation performances, low investment in research & development, quality problems and lack of a proper judiciary system¹⁷. In addition, as most Argentine firms continued to rely on local banks for their financing, relatively high lending costs (ranging from 12% for large companies to 20-30% for SMEs) had a detrimental effect on industry competitiveness and employment. As a result, very few sectors were truly competitive by international standards, and these were limited to fresh food, processed food, leather products, and only marginally minerals¹⁸.

Accepting that there was an exchange rate misalignment developed towards the later stage of the Convertibility plan does not automatically imply that current account imbalances between 1996 and 2001 were large enough to cause a financial crisis¹⁹. By any standard, Argentina's current account developments *alone* could not have triggered adverse capital markets sentiments. Yet, focusing on the current account and trade deficits ratios to GDP does not capture the whole story. What is peculiar about Argentina's trade performance is that despite aggressive trade reforms undertaken at the beginning of the 1990s, Argentina remained a relatively closed economy. As shown in Table 4, the openness ratio of Argentina is around 20% of GDP, and exports contribute to a mere 10% of GDP, which sharply contrasts with the much higher ratios of other emerging economies with the notable exception of Brazil.²⁰

The implication is straightforward in the context external of debt sustainability: with a limited export performance and heavy borrowing, the debt-to-export ratio is likely to rise very rapidly to very high levels, forcing the country to start rolling over its debt, and making the economy extremely vulnerable to foreign shocks. A quick examination of debt figures confirms this analysis. Although the debt-to-GDP ratio ended up at around 55% of GDP in 2001 –which is not very high by international standards-, it almost doubled since 1994, and the total external debt stands at more than 400% of exports. But vulnerability of Argentina's debt situation is best illustrated by its debt service ratios trends.

¹⁷ According to the *Global Competitiveness Report 2001-2002* produced by the World Economic Forum and the Harvard Center for Economic Development, Argentina's notable competitive disadvantages include low innovation, weak technology transfers, as well as institutional and governance impediments.

¹⁸ *Argentina Trade Performance Index 1996-2000*, International Trade Center UNCTAD/WTO.

¹⁹ See POWELL [2002] for a numerical discussion of this issue.

²⁰ Brazil's openness ratio is low as well, but this is at least partially explained by the fact that it is a relatively large economy (see Table 4).

Table 4. Trade Openness in Selected Countries
(%)

	1992	1995	1998	2000
Argentina				
Trade/GDP	14.7	19.8	23.3	22.2
Export/GDP	6.6	9.7	10.4	10.8
Brazil				
Trade/GDP	19.2	17.2	17.3	23.2
Export/GDP	10.9	7.7	7.7	10.8
Chile				
Trade/GDP	59.9	59.3	57.7	62.3
Export/GDP	30.7	30.6	26.8	31.8
Indonesia				
Trade/GDP	52.8	53.9	96.2	74.1
Export/GDP	27.9	26.3	52.9	42.4
México				
Trade/GDP	32.5	58.2	63.5	64.1
Export/GDP	15.2	30.4	30.7	31.1
Thailand				
Trade/GDP	77.9	90.2	101.6	125.9
Export/GDP	36.9	41.7	58.7	66.9

Source: World Bank

As Chart 11 shows, the debt-service-to-export ratio dramatically increased after 1996 and reached 85% of exports in 2001. Another illustration of the problem is given by the debt-service-to-internal-revenue ratio, which followed a similar trend, reaching 55% in 2001. Such ratios are exceptionally high compared to those of other emerging economies with the striking exception of Brazil. Interestingly, in the case of *Highly Indebted Poor Countries* (HIPC) launched by the IMF and the World Bank 1996, a sustainable debt-service ratio was believed to be close to 25% of exports and a sustainable ratio of total external debt to exports was set anything below 250%; additionally, a ratio of 20% of government revenues was used a frequent benchmark. Argentina was not playing in the same league as HIPC countries, but it is obvious that its borrowing strategy relied excessively on the low currency risk associated with the credibility of the Convertibility Plan. The fact that debt-to-GDP increased by 10 percentage points between 1996 and 1998 when real GDP was growing by 6% on average certainly signaled the beginning of an unsustainable path because the situation could only worsen with the slowing down of the economy²¹. Furthermore, 68% of the debt was denominated in US dollar, and 20% on EURO whereas only 5% was in Argentine Peso (Chart 12). Thus, Argentina faced the dual challenge of persuading creditors that it could both generate enough revenues to service its debt and convert these revenues into foreign exchange with an exchange rate that was rigidly pegged to the dollar²². This does not mean that Argentina's debt was grossly mishandled. On the contrary, debt managers were careful to avoid relying on short-term debt or on floating interest rate instruments, and smartly exploited market opportunities to float new amounts of sovereign debt in global credit markets until the

²¹ During that period, the average annual bond issue more than doubled in size, despite the international turbulence associated with the East-Asian meltdown and the Russian default.

²² MUSSA [2002], p.9.

second quarter of 2001. Argentina was also able to swap US\$ 30 billion of sovereign debt (20% of total) for larger maturities in the spring of 2001, thereby decreasing the amount of debt service (interest and principal) due between 2001 and 2005. The tradeoff was that the terms of the debt swap substantially increased debt service in later years. The move was consistent with what was perceived at the time as a *liquidity* problem, and not a solvency issue. However, even with appropriate management, one cannot postpone the problem indefinitely and keep convincing international capital markets that the Argentine's economy would grow again and move away from dangerous illiquidity.

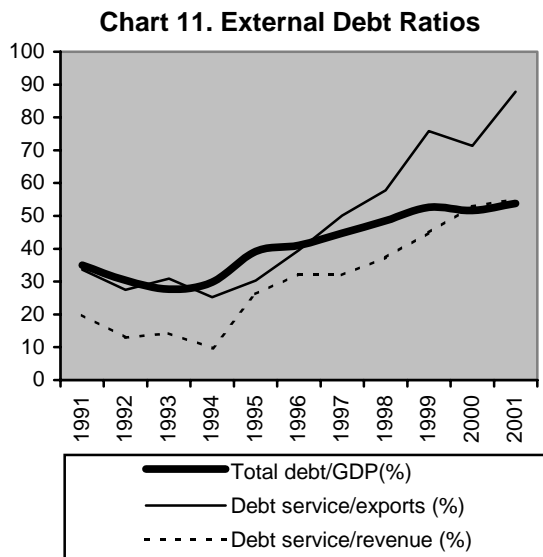
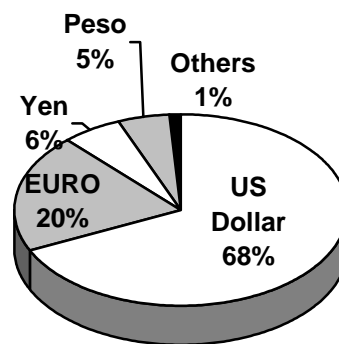


Chart 12. Total Debt: Currency Denomination



Source: World Bank, MECON

When did the final confidence crisis happen ? Relying excessively on low currency risk makes the currency board arrangement the last bastion of credibility. Once cracks appear in the structure of the arrangement, devaluation expectations build and the crisis is self-fulfilling in nature. In Argentina, those cracks were clearly visible in the early Summer of 2001, when Economy Minister Domingo Cavallo tinkered with the rules of the currency board by pegging the peso to a currency basket including the Euro and introducing a dual exchange rate system, thereby *de facto* devaluing the peso by 8% for trade transactions. Gambling with the credibility of the already fragile currency board system convinced markets that the Convertibility Plan was doomed. The departure of the Central Bank Governor, who was notoriously at odds with Domingo Cavallo, added to the pressure. Spreads soared soon after, reaching 2000 basis points on August 1st, 2001. A very last IMF package disbursed in September 2001 did little but postpone the inevitable: by the end of November 2001, reserves were barely sufficient to cover money in circulation and the run on banks achieved unprecedented levels.

Conclusion - Judging by the classic requirements of an optimal currency area, Argentina was not an obvious case of permanent exchange rate fixing, and the US Dollar was

certainly not an obvious choice for pegging the exchange rate in the long run, as Argentina's trade is primarily directed towards MERCOSUR and Europe. As suggested above, there is little doubt that a real exchange rate misalignment developed during the last five years of the Convertibility plan, and this certainly contributed to Argentina's competitiveness problems. Worse, by relying so much on foreign financing and thus on debt, Argentina trapped itself on a classical policy dilemma: either stabilize output or achieve external balance. As put elegantly by HAUSMANN & VELASCO [2002], it is clear that Argentina had an exchange rate *problem*, but it is not obvious that it had an exchange rate *solution*, especially with an external debt almost entirely denominated in foreign currency. Argentina's credibility was inexorably tied to its currency board so that it became virtually impossible to touch the arrangement. Indeed, having an exit strategy for a policy which is not revocable raises some internal consistency issues ! As a result, the government was completely glued to the convertibility *dogma*, and even today, no Argentine politician is willing to claim responsibility for revoking the currency board arrangement. With the benefit of hindsight, it is certainly possible to argue that Argentina should have devalued much earlier, say in 1998-1999, but it is less clear that the necessary structural reforms aimed at making the devaluation work and jumpstarting the economy would have been *politically* feasible. And given the high dependence of Argentina on capital flows, redefining the terms of market confidence would have been a tough gamble. Let us not forget that after the East-Asian crisis and the Russian meltdown, investors became extremely risk adverse.

3. Fiscal Adjustment: Too Little or Too Much ?

Blaming Argentina's bad fiscal performance from 1991 to 2001 has become the dominant *ex-post* story, endorsed by the IFIs (KRUEGER [2002], PERRY & SÉRVEN [2002]), the financial community and various authors (e.g. BAER, ELOSEGUI & GALLO [2002], MUSSA [2002] and WYPLOSZ [2002a]). For example, MUSSA [2002] described Argentina in a colorful style as being a "*chronic alcoholic*" in the management of its fiscal affairs ("*once its starts to imbibe the political pleasures of deficit spending, it keeps on going until it reaches the economic equivalent of falling down drunk*" p, 7). According to these authors, Argentina suffered from a lack of fiscal adjustment –for which the IMF is to blame for being unusually lax- which ultimately triggered the financial crisis because of debt dynamics. However, this interpretation of the Argentine crisis has several detractors, including HAUSMANN & VELASCO [2002] and STIGLITZ [2002], who argue that fiscal imbalances were not so large and were very much related to the economic recession. According to that interpretation, fiscal tightening could only make things worse in slowing growth even further, and this could have precipitated the crisis rather than halted it.

This passionate debate about the role of fiscal policy is hardly surprising. As in any fixed exchange-rate system, the Convertibility Plan greatly reduced the choice of policies available to policy makers to mitigate shocks. Monetary policy being (almost) unavailable by design, adjustment rests on the shoulders of fiscal policy alone, making it virtually the only tool of macroeconomic management. This implies the need to strike a

difficult balance between (short term) flexibility and (long-term) rules to maintain a sustainable debt level.

So what is the evidence in the case of Argentina, and why is there such a divergence of views about the role of fiscal policy in the crisis ?

a. Fiscal Performance –Let the Numbers Talk

With a record of eight stabilization programs fully or partially implemented in the 25 years preceding the Convertibility Plan (three of which took place between 1985 and 1990!), Argentina has had first-hand experience of the disastrous effects of deficit financing through direct monetization. In fact, low growth, inflation and chronic deficits plagued the economy, with budget deficits averaging 6-8% of GDP for most of the 1980s. Putting a halt to this vicious circle was precisely the rationale behind the convertibility system, by making recourse to easy money constitutionally impossible. Against this background, Table 5 below gives a snapshot of the consolidated fiscal accounts of Argentina in the 1990s and Table 6 presents some estimates of the fiscal stance and impulse²³. Five immediate observations can be made by taking a close look at the numbers.

First, when off-budget operations are taken into account, fiscal accounts were *continuously* in deficit during the whole time of the Convertibility plan, including during the high growth years. If the social security system –which was privatized in 1993- is excluded from the calculations, the picture is almost the same, although the deficit figures are more modest. The fiscal stance measures essentially confirm this observation: *the fiscal stance was expansionary throughout the whole period 1992-2001*, although it turned slightly contractionary after 1999, when the social security system is excluded from the calculations.

Second, the primary balance was even moderately positive until the Tequila crisis, but did not exhibit a worsening trend before 2001. Interestingly, some fiscal adjustment took place during the second half of the period (except in 1999), as the primary balance did not collapse despite the recession. The primary balance was comparatively weak during the boom years, i.e. when the economy was growing at 8% on average. This story is confirmed by fiscal impulse measures (see Chart 13), which show that fiscal policy had a pro-cyclical effect on aggregate demand during the boom years (1992-1994) and then turned slightly negative, as fiscal adjustment was attempted.

²³ The stance of fiscal policy is defined here as the difference between the actual fiscal balance and an estimate of the cyclically adjusted balance, calculated using revenue and expenditure ratios in a base year in which actual and potential output were deemed to be the same. The underlying idea is that cyclical factors in the budget balance are transitory and self-correcting whereas an analysis of the fiscal impact should focus essentially on underlying “discretionary” policy actions that are expected to have a lasting impact on demand. The fiscal impulse simply represents the change in the fiscal stance from one year to another.

Third, (non-interest) public expenditures were relatively flat during the whole period, and did not exhibit a particular spending feast. Yet, there was a marked deterioration in 1999, due to a sharp increase in the wage bill. On the revenue side, it is fairly clear that tax performance has never really taken off, and has remained substantially below that of other emerging economies. Tax buoyancy, which measures the increase in the revenue collected compared to the relative increase in GDP, was indeed very weak before the Tequila crisis (value of 0.9, implying that when GDP grew by 1%, tax revenue grew by 0.9%) and then gained momentum between 1996 and 1998 (value of 1.9), but fell again after 1998 to pre-1996 levels²⁴.

Fourth, interest payment increased steadily after 1995 and contributed to a significant part of the growing deficit. The shift is particularly obvious after the Russian crisis in 1998. By the same token, debt creating operations –recorded off-budget- have put additional weight on the deficit between 1995 and 1999, signaling an increasing reliance on debt financing, primarily in the form of bonds.

Fifth, as the financing of the social security system changed after 1993, the social security balance shifted from a surplus to a continuous deficit. The cumulated social security deficit reached 13.2% GDP between 1996 and 2001, therefore contributing to the bulk of the overall deficit.

These numbers show that the fiscal situation was an obvious source of concern throughout the period: although deficits were certainly not large by any standard until the late 1990s, persistent deficits were not compatible with the implicit rules of the currency board system. Fiscal discipline was weak during the high growth years, making it difficult for Argentina to reverse the tide during bad economic years. As shown by the fiscal impulse measures, the primary balance excluding the social security system did improve between 1996 and 2001 despite an economic recession, revealing some adjustment attempts. Such attempts were unfortunately offset by new borrowing and the sharp deterioration in the fiscal accounts of 1999, an important presidential election year in Argentina. This deterioration, which resulted in non-compliance with the *Fiscal Responsibility Law* enacted in mid-1999, was due to a rise in interest payment as well as to an almost 1% GDP increase in the wage bill, and occurred despite the large receipts from privatization receipts. Interestingly, the wage bill surge seems to be due both to the mounting differential between the wages and salaries paid by the federal government and those in the private sector, as well as to a sharp rise in public employment at the regional level in connection with the presidential elections.

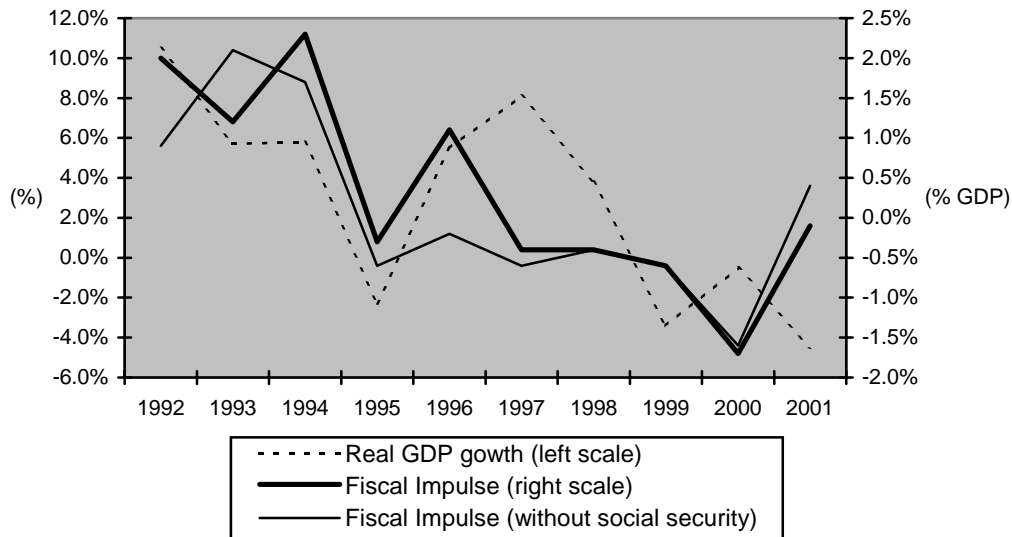
²⁴ Tax buoyancy, defined as $\frac{\Delta \text{Real Revenue}}{\Delta \text{Tax base (GDP)}} = \frac{1 + \Delta T}{1 + \pi} - 1 \bigg/ \frac{1 + \Delta Y}{1 + \pi} - 1$, is a rough measure as the increase in revenue reflects any effects of changes in the tax system, including discretionary changes in the tax structure.

Table 5. Consolidated Government Operations
(% GDP)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Total expenditure	23.9	23.8	24.5	25.7	25.6	25.4	25.2	25.8	27.7	28.2	29.8
Wages	8.0	8.4	8.8	8.9	8.9	8.3	8.2	8.3	9.4	9.5	9.9
Pensions	5.4	6.0	5.6	5.9	6.0	6.2	5.9	5.8	6.2	6.1	6.2
Other	7.1	7.5	8.8	9.3	8.7	8.8	8.8	9.0	9.5	8.6	8.9
Interest payments	3.0	1.9	1.4	1.6	1.9	2.1	2.3	2.6	3.4	4.0	4.8
Total primary spending	20.6	21.9	23.1	24.1	23.7	23.3	22.9	23.2	25.1	24.2	25.0
Total Revenue	20.1	23.4	24.6	24.1	23.2	22.2	23.2	23.7	24.3	24.7	23.5
Tax	13.6	16.2	16.1	16.2	15.2	15.8	16.8	17.4	17.5	18.1	17.5
Social security	4.6	5.1	5.9	5.7	5.3	4.4	4.2	4.0	3.8	3.7	3.6
Privatization	0.0	0.9	0.2	0.3	0.5	0.1	0.0	0.0	0.9	0.0	0.0
Other	1.8	1.2	2.3	1.9	1.9	1.9	2.2	2.3	2.0	2.8	2.5
Primary Balance 1	-0.5	1.4	1.5	0.1	-0.4	-1.1	0.3	0.5	-0.8	0.4	-1.5
Primary Balance 2	0.2	2.3	1.2	0.3	0.3	0.1	1.4	1.3	1.6	2.8	1.1
<i>(exl. social security)</i>											
Off-budget operations	0.0	0.1	0.3	0.4	0.8	0.5	0.3	0.4	0.5	0.0	0.0
Overall Balance	-3.5	-0.5	-0.3	-1.9	-3.1	-3.6	-2.4	-2.5	-4.7	-3.6	-6.4
<i>(including interest)</i>											
<i>Memorandum:</i>											
Real GDP growth (%)	10.3	10.5	5.7	5.8	-2.3	5.5	8.1	3.8	-3.4	-0.5	-4.5
External debt (% GDP)	35.0	30.4	27.7	29.8	39.2	41.0	44.7	48.5	52.6	51.7	53.8

Source: IMF

Chart 13. Fiscal Impulse and Real GDP Growth



Source: Table 6

Table 6. Fiscal Stance and Impulse, 1992-2001
(% GDP unless specified otherwise)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Primary Surplus	1.4	1.5	0.1	-0.4	-1.1	0.3	0.5	-0.8	0.4	-1.5
Primary Surplus (excl. Social Security, "ESS")	2.3	1.2	0.3	0.3	0.1	1.4	1.3	1.6	2.8	1.1
Fiscal Stance	0.0	0.7	2.9	2.6	3.6	2.9	2.5	2.0	0.3	0.2
Fiscal Stance ESC	0.0	1.7	3.3	2.7	2.4	1.7	1.2	0.6	-1.0	-0.7
Fiscal Impulse	2.4	0.7	2.3	-0.3	1.1	-0.4	-0.4	-0.6	-1.7	-0.1
<i>Expend. Contribution</i>	5.0	1.9	1.9	-1.2	0.0	0.5	0.1	-0.1	-1.3	-1.3
<i>Revenue contribution</i>	-2.6	-1.2	0.4	0.9	1.1	-0.9	-0.6	-0.6	-0.3	1.2
Fiscal Impulse ESC	1.2	1.7	1.7	-0.6	-0.2	-0.6	-0.4	-0.6	-1.6	0.4
<i>Expend. Contribution ESS</i>	3.4	2.1	1.4	-1.1	-0.3	0.6	0.3	0.1	-1.1	-0.9
<i>Revenue contribution ESS</i>	-2.2	-0.4	0.3	0.5	0.1	-1.2	-0.7	-0.7	-0.5	1.3
<i>Memorandum item</i>										
<i>Real GDP Growth (%)</i>	10.3	10.5	5.7	5.8	-2.3	5.5	8.1	3.8	-3.4	-0.5

Source: Author's calculations

Notes:

$$\text{Fiscal Stance } FS_t = PB_t - (g_0 Y_{pt} - t_0) = (G_t - g_0 Y_{pt}) - (T_t - t_0 Y_t)$$

$$\text{Fiscal Impulse} = \Delta FS_t = \left(\frac{1}{4} \Delta Y_{24} - \frac{1}{4} \Delta T_{34} \right) + \left(\frac{1}{4} \Delta G_{14} - \frac{1}{4} \Delta Y_{24} \right)$$

Revenue contribution Expenditure contribution

Where PB_t is the primary balance in year t , G_t and T_t are the nominal primary expenditure and revenue in period t , g_0 and t_0 are the ratios of expenditure and revenue relative to GDP in the equilibrium base year, Y_t and Y_{pt} the actual and potential GDP in year t .

Base year: following IMF research on Argentina, 1992 was selected as the base year (see *IMF Country Report* 98/38, p.7)

Potential output: two estimates were constructed, one through the Hodrick-Prescott (HP) filter, and one fitting a straight line. In order to control for the bias produced by the HP filter at end-points, a median value between the two estimates was calculated.

b. The Tax System – Collection, Exemptions, Federalism and Other Evils

As indicated in the previous section, one of the striking features of Argentina's fiscal record during the last decade was the relatively weak tax revenue performance. Reform of the tax regime was introduced together with the convertibility plan, but despite various tax hikes, including the controversial "*impuestazo*" implemented in 2000, revenue collection remained far behind expectations. This problem was crucial from a policy standpoint because public expenditures were by and large inflexible²⁵. Indeed, the average tax pressure (i.e. the ratio of domestic revenue to GDP) of the central government was 13.1% of GDP between 1995 and 2000, while the consolidated government figure was 16.9%. For comparison purposes, the corresponding figures were respectively 16.4% and 22.1% in Chile, 16.3% and 19.3% in Uruguay, and 17.7% and 26.1% in Brazil during the same period. Among the factors contributing to poor tax revenue performance in Argentina, the most notorious is *high tax evasion*, which is

²⁵ According to data published by MECON, earmarked public expenditures accounted for 85% of total expenditures on average between 1993 and 2001.

fueled by high tax rates, a tradition of tax amnesties, and pervasive incentives linked to its federal system.

Tax Regime – The Laffer Curve Strikes Back.

Tax evasion is usually estimated at around 30-40% in Argentina, with the highest evasion recorded on VAT (45%)²⁶. Industry-specific estimates indicate that this phenomenon reaches surrealistic levels in the hotel and restaurant sector (for every \$100 paid, \$160 is evaded), followed by the shoe and textile industry, retailing and food processing²⁷. This simply reflects the fact that the bulk of those sectors operates in the underground economy. In the more formal sectors, tax evasion is in the 40% range. This is by no means an exception in Latin America, where tax evasion is widespread and has reached the status of a national sport. Comparative data is scarce, but anecdotal evidence suggest that Argentina's tax evasion figures easily compare to those of Brazil, Mexico or Uruguay. Probably the lowest incidence of tax evasion is in Chile, with 23% (19% for VAT)²⁸.

Apart from a genuine "culture" of tax evasion –especially among the elite-, one factor that has definitely aggravated the problem is the heavy tax burden. Even by Latin American standards, corporate tax were very high at 35% (compared to 15% in Chile), and VAT ranged from 21% (general rate) to 27% (services such as electricity, gas and water). Furthermore, labor taxes were higher than the average for both industrialized and Latin American countries, and accounted for more than 40% of total payroll payment. As a result, combined payroll taxes have averaged 43%. At the provincial level, the major tax used was the turnover tax, which is a cascading tax that constitutes a drag on enterprise's cost, fosters inefficient vertical integration, increases exports costs, and de facto competes with the federal value added tax²⁹. *The heavy tax regime of Argentina yielded a well-known Laffer curve effect, as tax evasion was used by companies (SMEs in particular) to cut costs with a growing number of people forced to join the informal economy.*

In the hope to encourage tax filing and boost tax collection, various forms of tax amnesties (backward-looking "moratorias", spontaneous filing and other open-ended facilities) were granted virtually every year between 1991 and 2000, both at the Federal and at the Provincial level. Overall, such attempts have produced few tangible results, as less than 40% of the overdue consolidated tax was actually paid at the Federal level³⁰. The authorities have also tried to use high-tech means to help fight tax evasion by implementing a wheat crop satellite monitoring service in 2001, but tax evasion is similar to currency substitution in that repressive means usually achieve the opposite results.

²⁶ TOMMASI, M., SAIEGH, S., SANGUINETTI, P., "Fiscal Federalism in Argentina: Policies, Politics and Institutional Reform", *Economia*, Spring 2001, p.161.

²⁷ ELSTRODT, H.P., *et al.*, "Micro Lessons for Argentina", *The MacKinsey Quarterly*, No.2, 2002.

²⁸ BARRO, P., JORRATT, M., "Estimación de la evasión tributario en Chile", Mimeo, Servicio de Impuestos Internos (Chile), Junio 1999, p.18.

²⁹ TOMMASI, SAIEGH, SANGUINETTI, *op.cit.*, p.163.

³⁰ See Section V on Federal Tax Amnesties in IMF SM/00/203, "Argentina – Selected Issues and Statistical Appendix", September 2000, pp.26-30.

Tax Structure – The Uninvited Guests of Fiscal Federalism

Argentina is organized as a Federation, with a great deal of fiscal responsibility accruing to the Provinces. Fiscal decentralization is far-reaching by Latin-American standards, especially on the expenditure side since Provinces are responsible for more than two-thirds of public sector expenditures (excluding pensions)³¹. On the tax side, despite constitutional responsibilities accruing to the Provinces, the task of administering most of the important taxes (including VAT and income taxes) has been delegated to the national government. This system of expenditure decentralization *cum* tax centralization has resulted in a high degree of vertical fiscal imbalance, as more than one third of the Provinces finance less than 20% of their expenditure with their own revenue. Argentina addresses this large vertical fiscal imbalance through a complex system of intergovernmental transfers. The most important component of this system is the tax-sharing agreement (“*Coparticipación*”), which is the process by which part of the taxes collected by the central government are reallocated to the provinces. This, coupled with the large borrowing authority allocated to Provinces, “*has been shown to create negative incentives for provincial administration by inducing a common pool problem and by causing provincial authorities to behave opportunistically*”³². For instance, many provincial governments used generous industrial promotion regimes, which exempted industries established in certain regions from national taxes (VAT in particular). Such regimes have generated substantial tax competition among the different regions and created an important revenue shortfall for the Central Government.

Under such conditions, it does not come as a surprise that provincial governments ran continuous deficits between 1991 and 2001, which on average were larger than those of the central government. In several cases, the Central government had to bail out provinces in financial difficulties, especially during the first half of the 1990s. This accumulation of deficits translated into increasing debt financing, the stock of which reached 80% of central government revenue in 2001, as shown in Table 7. Interestingly, a significant part of this additional financing was forced on suppliers and public employees, as some provinces accumulated large amounts of wage arrears. Indeed, on average, such arrears accounted for 20% of aggregate provincial debt, whereas bank loans totaled 30%, public bonds 10%, international organizations 20% and other means (including debt with the national government) 20%. Furthermore, some portion of the wages and debt to suppliers was paid with provincial bonds. This practice started in 1995 in the Córdoba region and accelerated until the meltdown of the Currency Plan. These bonds were used for transactions purposes in their respective provinces, and some of them could even be withdrawn from ATM cash machines, thereby constituting quasi-currencies. In 2001, the Central government even agreed that these bonds be used in the payment of national taxes. By December 2001, more than 20 quasi-currencies were identified - the most important of which are summarized in Table 8- amounting to US\$ 4 bn, i.e. 22% of the peso-denominated money supply.

³¹ TOMMASI, M., SAIEGH, S., SANGUINETTI, P., “Fiscal Federalism in Argentina: Policies, Politics and Institutional Reform”, *Economía*, Spring 2001, p.150.

³² TOMMASI, SAIEGH & SANGUINETTI [2001], *op.cit.*, p.154.

Table 7. Aggregate Provincial Debt, 1994-2001

	US\$ bn	% change	As % GDP	As % Total Central Govt. Revenue
1994	11.1	...	4.3%	35.1%
1995	14.6	31.5%	5.7%	47.0%
1996	15.6	6.8%	5.7%	47.0%
1997	14.8	-5.1%	5.1%	38.6%
1998	15.8	6.8%	5.3%	39.1%
1999	16.8	6.3%	5.9%	43.5%
2000	21.3	26.8%	7.5%	52.4%
2001	30.1	41.3%	11.2%	81.0%

Source: MECON

Table 8. Quasi-Currencies in Circulation, December 2001

Issuer	Denomination	US\$ bn
Federal Government	"LECOP"	1.9
Provincial Governments		2.1
Buenos Aires	"Patacones" (A and B)	0.9
Catamarca	"Ley 4748"	0.03
Córdoba	"LECOR"	0.5
Corrientes	"Cecacor"	0.2
Chaco	"Quebracho"	0.05
Entre Rios	"Federal"	0.2
	"Bonfe"	0.05
Formosa	"Bocanfor"	0.05
Jujuy	"Patacon"	0
La Rioja	"Bocade"	0
Mendoza	"Petrom"	0
Tucumán	"Bocade"	0.09
Total Quasi-Currencies		4.0
<i>As % of pesos in circulation (M0)</i>		<i>37%</i>
<i>As % of M3 (peso)</i>		<i>22%</i>

Source: TOMMASI [2002], MECON

In a nutshell, this section has illustrated some of the constraints which plagued fiscal performance in Argentina, particularly on the tax revenue side. Although the details lie outside the scope of this paper, it appears that fiscal federalism gave rise to typical free rider and moral hazard problems, leading to rising and uncontrolled debt financing at the level of the regions while tax erosion and evasion was fueled by an improper tax regime, which was not conducive to private sector growth.

c. Debt Sustainability Analysis

This brings us to the crucial issue of whether or not Argentina's fiscal policy was adequate from a debt sustainability standpoint, and more importantly, whether the fiscal accounts were a plausible cause of the 2001 financial meltdown. To examine this issue,

two alternative simulations of debt sustainability are used, one following the standard debt dynamics framework of EASTERLY & FISHER [1990], and one following a simple sustainability model described in Annex II. Both models use a “gap approach”, that is determining the primary surplus compatible with a stable debt to GDP ratio (including both domestic and external debt) and comparing it with actual primary deficits for each period, but the main difference is the inclusion of export growth in the second model.

As can be seen from Table 9, both approaches essentially tell the same story: *irrespective of the treatment of the social security system, debt sustainability was questionable as early as 1999, but became a clear problem only in 2001*. The adjustment made in 2000 is also visible from the calculations. An examination of the standard NPG (No-Ponzi-Game) solvency conditions both for domestic debt³³ and for external debt³⁴ point to the same conclusion: the solvency condition did not hold for domestic debt from 1998 onwards, whereas it was first breached for foreign debt in 2001 only. This would suggest that, although the government was able to marginally improve the (ex-social security) primary surplus to accommodate the increase in debt service in the second half of the 1990s, such adjustments were hardly sustainable over time given the growth, exports and interest rates parameters.

The story becomes much clearer if direct and indirect effects of exchange rate overvaluation since 1996 are factored in the analysis of the government’s balance sheet³⁵, as 70% of debt was denominated in US dollars while Government’s revenue was not, thereby implying undervalued measures of debt to GDP ratios: *if interest-rate spreads are used in the sustainability analysis as a proxy for currency risk, then the debt-sustainable primary deficit would have exceeded 7.5% in 2001 (see Table 10)*.

³³ The inter-temporal domestic debt solvency constraint requires that $\lim_{N \rightarrow \infty} \left(\frac{1+y}{1+r} \right)^{N+1} b_{N+1} = 0$, with y denoting the growth rate of real GDP and r denoting the real interest rate on domestic debt. This condition constraints the debt-to-GDP ratio to grow no faster than the effective real interest rate $(1+r)/(1+y) - 1$.

³⁴ The external solvency constraint requires that the amount that country borrows in international markets equals the present value of future trade surplus, and implies that $\lim_{T \rightarrow \infty} \left(\frac{1+\theta}{1+R^*} \right) = 0$, with θ denoting the growth in external debt ratio to GDP and R^* denoting the foreign interest rate. Thus, net foreign liabilities cannot grow faster than the foreign interest rate.

³⁵ PERRY & SÉRVEN [2002], p.41.

Table 9. Debt Sustainability Calculations, 1994-2001
(% GDP)

	1994	1995	1996	1997	1998	1999	2000	2001
Model 1 (Government budget constraint)								
Sustainable primary surplus	-1.0	3.1	-0.2	1.0	1.0	4.5	3.1	6.1
Actual surplus	0.1	-0.4	-1.1	0.3	0.5	-0.8	0.4	-1.5
Actual surplus (excl. Social Security, ESC)	0.3	0.3	0.7	2.0	2.3	1.6	3.1	1.1
Gap (necessary adjustment +)	-1.1	3.5	0.9	-1.1	0.5	5.3	2.7	7.6
Gap ESC (necessary adjustment +)	-1.3	2.8	-0.9	-2.9	-1.3	2.9	0.0	5.0
Model 2 (Fiscal & External constraint)								
Sustainable primary surplus	-1.4	-1.6	-3.7	-3.1	-0.2	3.0	2.6	3.6
Actual surplus	0.1	-0.4	-1.1	0.3	0.5	-0.8	0.4	-1.5
Actual surplus (excl. Social Security, ESC)	0.3	0.3	0.7	2	2.3	1.6	3.1	1.1
Gap (necessary adjustment +)	-1.3	-1.4	-3.1	-3.9	-1.2	3.0	1.4	3.9
Gap ESC (necessary adjustment +)	-1.5	-2.1	-4.9	-5.6	-3.0	0.6	-1.3	1.3

Notes:

Model 1 sustainability constraint:
$$\left(\frac{d}{y}\right)_t = \left(\frac{\Delta y}{y_{t-1}} - i_t\right) \cdot \left(\frac{b}{y}\right)_{t-1} + \left(\frac{\Delta y}{y_{t-1}} - i_t^*\right) \cdot \left(\frac{b^*}{y}\right)_{t-1}$$

Where d=primary deficit/surplus, y=real GDP, b=real domestic debt, i=real interest rate on domestic debt, i*=real interest rate on foreign debt, and b*= real foreign debt

Model 2 sustainability constraint:
$$\left(\frac{d}{y}\right)_t = \left(\frac{b}{y}\right)_{t-1} \cdot \left(\frac{\Delta y}{y_{t-1}} - i_t\right) + \left(\frac{b^*}{y}\right)_{t-1} \cdot \left(\frac{\Delta x}{x_{t-1}} - i_t^*\right)$$

Where x=real exports. In the case of export growth, a 3-year average has been used for the calculations.

Note that in both models, the terms associated with seignorage revenue and exchange rate change do not appear as they are not relevant in Argentina's case. The "gap" reported in Table 9 denotes the debt sustainable surplus/deficit minus the actual surplus/deficit.

Table 10. Debt Sustainability Adjusted for Currency Risk, 1996-2001
(% GDP)

	1996	1997	1998	1999	2000	2001
(Model 2)						
Baseline sustainable primary surplus	-3.7	-3.1	-0.2	3.0	2.6	3.6
Actual surplus	-1.1	0.3	0.5	-0.8	0.4	-1.5
Actual surplus (excl. Social Security, ESC)	0.7	2	2.3	1.6	3.1	1.1
Average spreads (basis points)	374	329	530	630	627	1850
Risk adjusted sustainable primary surplus	-3.5	-2.8	1.2	5.4	4.6	10.2
Gap (necessary adjustment +)	-2.4	-3.1	0.7	6.1	4.2	11.7
Gap ESC (necessary adjustment +)	-4.6	-5.3	-1.7	2.7	0.6	7.5

Note: see Table 9 for definitions

Could more fiscal adjustment have altered the situation and affected solvency expectations in a significant way ? Looking at Argentina's fiscal record, the trivial answer is that as late as 2000-2001, it would have been economically, socially and politically difficult if not impossible to reach higher primary surpluses, especially when what was needed was beyond 3 or 4% of GDP. When an economy is already in deep recession, running a highly contractionary fiscal policy invariably has a negative impact on growth in the short run, and thus tends to lock the debt dynamics in an even more unsustainable path. This is precisely what happened when Fernando De la Rúa's economic team introduced tax hikes in January 2000 (the "*impuestazo*") and when Economy Minister Domingo Cavallo introduced a controversial financial transaction tax in April 2001³⁶. These drastic measures not only failed to deliver substantially more tax revenues, but also hampered economic activity. Believers in the "confidence game" à la Krugman³⁷ would argue, however, that a contractionary fiscal policy can be expansionary through its positive signaling effect on financial markets, thereby resulting in lower spreads and thus in lower interest rates, which may positively impact growth through investment. But this eventually holds true as long as the market believes in the capacity of the economy to grow and in the capacity of the government to implement tight policies over time. Obviously, such conditions were not met in Argentina in 2000-2001, as growth prospects were bleak, macroeconomic management was showing increasing weaknesses, and governance problems³⁸ started to show. Under these circumstances, and in the face of an unsustainable debt path, relying on fiscal adjustment *at that particular point in time* was mostly an illusion: any fiscal tightening was bound to kill economic recovery and hence create further negative market sentiments, while any fiscal loosening was also likely to create negative market sentiments, illustrating the perverse nature of the debt sustainability trap when an economy is in deep recession. What was needed was a combination of growth and fiscal tightening, not one at the expense of the other, something that failed to materialize in Argentina.

Conclusion - Although fiscal numbers did not exhibit abyssal deficits, the fiscal situation of Argentina was a growing source of concern throughout the late 1990s, especially if the real overvaluation of the peso is factored in the analysis. Arguably, fiscal imbalances were not very large, and were very much related to the economic recession during the later years. But *fiscal policy was not consistent with debt dynamics when doubts about the currency regime started to increase*. As a result, Argentina was glued in a trap of low growth, overvalued exchange rate, and increasing debt and rolling-over requirements. At that point, it was simply too late for effective fiscal adjustment. The focus on the policy *timing* is important to reconcile the existing views in the role of fiscal policy. With the benefit of hindsight, although MUSSA's view [2002] that fiscal policy was "*irresponsible*" is too extreme, one can fully agree with PERRY & SÉRVEN [2002], that *the boom years*

³⁶ One could also add the unsuccessful attempt to cut expenditures in 2001 by Economy Minister Lopéz-Murphy, which resulted in his immediate ousting.

³⁷ As noted by KRUGMAN [1998] in the context of the East-Asian crisis, policy advice is often being ensnared in a "*confidence game*", that is advising policies that will appeal to investor prejudices or to what investors believe are the prejudices of their colleagues. This makes for a tricky game of crystal ball gazing.

³⁸ An obvious illustration was the corruption scandal involving the Vice-president in 2000, leading to the resignation of the latter.

from end 1995 to mid 1998 were a missed opportunity to address the structural fiscal imbalances of the country , especially at the level of fiscal federalism. If something could have been done on the fiscal front, it was definitely during those years. However, as the above discussion suggests, the alleged expansionary role of fiscal contraction can be a dangerous illusion when the debt is unsustainable and when economic policy management is fragile. Against this background, it would seem that there was not enough fiscal adjustment in Argentina in the lead up to the crisis, but perhaps also counter-productive attempts when it was already too late. But the key point is that decisive *trigger* of the crisis was not truly fiscal. Domingo Cavallo's tinkering with the rules of the currency board removed Argentina's last bastion of credibility and convinced financial markets to rush to the exit door.

4. Growth: the Weakest Link

As illustrated in the analysis of debt sustainability and fiscal adjustment, growth (or the lack thereof) is one crucial item in the whole discussion, and certainly one of the triggers of the 2001 crisis. In this respect, Argentina's experience is interesting as it reveals the inherent limitations of market reforms that looked impressive on paper but that failed to deliver. In a nutshell, *Argentina's growth performance in the 1990s very much reflected the major contradiction in the convertibility plan, i.e. relative macroeconomic stability despite large microeconomic imbalances, resulting in a lack of coherent development policy.*

a. Growth and Productivity Gains: Miracle or Illusion ?

On the reform front, Argentina undertook what looks like one of the most spectacular and aggressive reform package of the Western Hemisphere in the early nineties, to revamp an economy marked by years of erratic economic policy. Together with the introduction of the Convertibility plan, the economy was quickly exposed to foreign competition with trade liberalization measures, rapid deregulation and the opening up of many economic sectors, the establishment of a liberal foreign investment regime and the elimination of price controls. The financial sector, plagued by the hyperinflation years of the 1980s, was modernized and substantially cleaned up after the banking crisis triggered by the Mexican peso meltdown in 1994.

Furthermore, Argentina initiated a privatization process in 1989 that was at the forefront of the international experience. While most countries viewed infrastructure services as highly strategic, the Menem administration started by privatizing the big utilities, breaking with the traditional pro-state stance of the Peronist Party. Given the straightjacket imposed by the Convertibility plan, the breadth of the sectoral changes and their very swift implementation were mostly driven by fiscal reasons³⁹. Throughout the first three years of the Convertibility plan, the Government divested of 90% of the all

³⁹ CHISARI, O., ESTACHE, A., ROMERO, C., "Winners and losers from Utilities Privatization: Lessons from a General Equilibrium Model in Argentina", Centro de Estudios Económicos de la Regulación (Buenos Aires), *Working Paper No.3*. March 1999, p.4.

state enterprises for the equivalent of more than US\$20 billion, which helped clean up the different debts and liabilities. This constituted a genuine “*shock therapy*” for some sectors of the Argentine economy, as employment in privatized enterprises was reduced by 55%, with large reductions in the railways, oil and steel sectors.

This cocktail of liberalization *cum* deregulation policies produced impressive results during the golden period of the Convertibility plan. From 1991 to 1994, the investment ratio to GDP increased sharply, and more importantly total factor productivity (TFP) grew by 21% (Charts 14 and 15). After the Tequila crisis shock, the same pattern was observed until 1997, but the productivity dramatically collapsed afterwards. Investment plummeted, driven by rising real interest rates. Worse, in the post-crisis year of 2002, total factor productivity had almost reached the pre-convertibility level of year 1990, after a ten year positive “bubble”, and productivity stood at just 32% of the US level⁴⁰.

Chart 14. Investment Ratio and Real Interest Rates

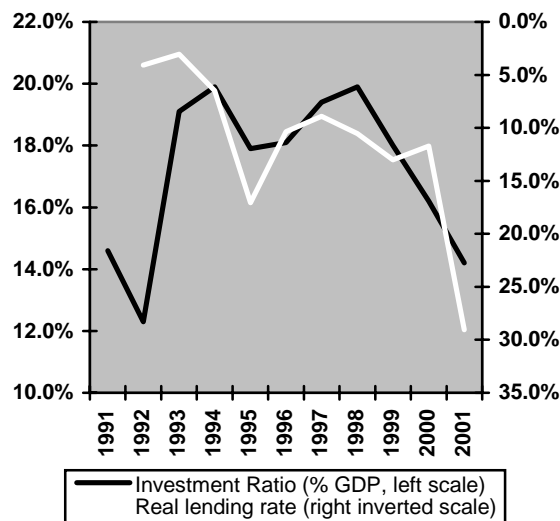
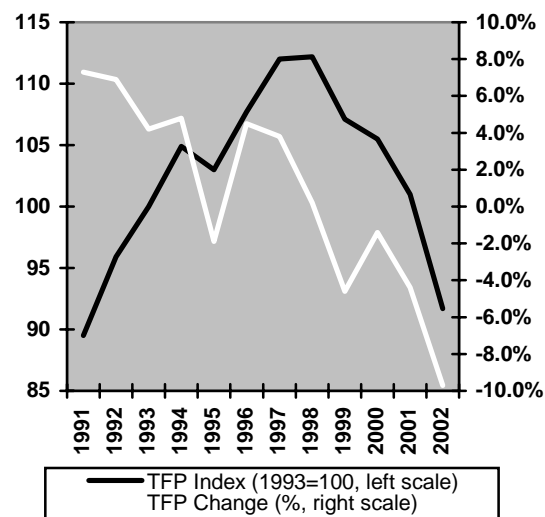


Chart 15. Total Factor Productivity



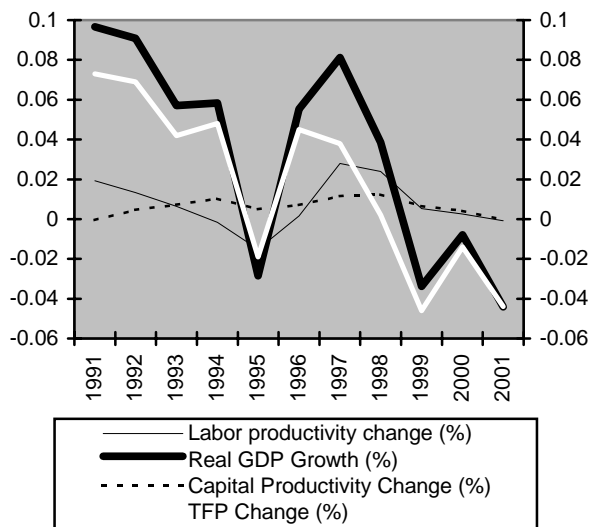
Source: MECON, MAIA & NICHOLSON (MECON) [2003]

As shown in Chart 16, real GDP growth and TFP changes followed a very similar pattern throughout the Convertibility Plan, indicating that real growth was heavily influenced by productivity swings. Interestingly, capital productivity change remained fairly flat throughout the period whereas labor productivity generally declined despite a rebound between 1995 and 1997. Evidence on productivity gains is actually very *heterogeneous at the company level*, as it turns out that the overall increase in factor productivity was not the result of improvements in all sectors of the economy. In fact, the direct impact of the “*shock therapy*” reforms of the early nineties explains most of the productivity “bubble”, as productivity gains were confined to newly privatized sectors of the economy (the big

⁴⁰ *The McKinsey Quaterley* No.2, 2002.

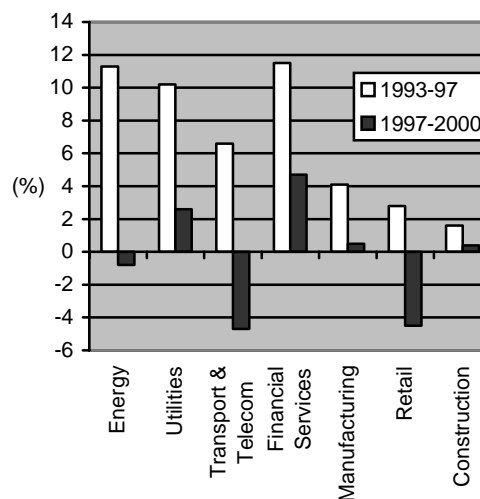
utilities in particular), reflecting drastic downsizing in some former states monopolies and acquisition of new technologies and business practices. However, these gains remained largely *one-off occurrences*, as productivity generally declined after 1996 in these very same sectors, as shown in Chart 17.

Chart 16. Real GDP growth and Productivity growth (%)



Source: MAIA & NICHOLSON (MECON) [2003]

Chart 17. Productivity Growth by Sector (%)



Source : MCKINSEY [2002]

In other sectors of the economy, the picture is mixed, as half of the firms (large enterprises and SMEs alike) recorded total factor productivity declines between 1992 and 1998, despite the more stable macroeconomic environment provided by the Convertibility Plan⁴¹. This suggests that productivity growth was highly concentrated in a few firms and sectors while negative firms with negative productivity changes spanned across the whole economy⁴². Firm level data also reveals that productivity gains were biased towards the non-tradable sectors whereas value added changes were negative in the tradable sectors (Table 11). This reflects the fact that foreign direct investment flows have primarily targeted non-tradable sectors in Argentina, as suggested by Chart 18, as a result of high relative non-tradable prices. Such an allocation of resources not only had serious implications for the trade balance, but also feeds into the real exchange rate overvaluation issue discussed in section IIb: a productivity improvement in the non-tradables goods actually moves the *equilibrium real exchange rate* downward, thereby increasing the gap between the actual real exchange rate and its equilibrium value⁴³.

⁴¹ See BOUR [2002].

⁴² *Idem*, p.9.

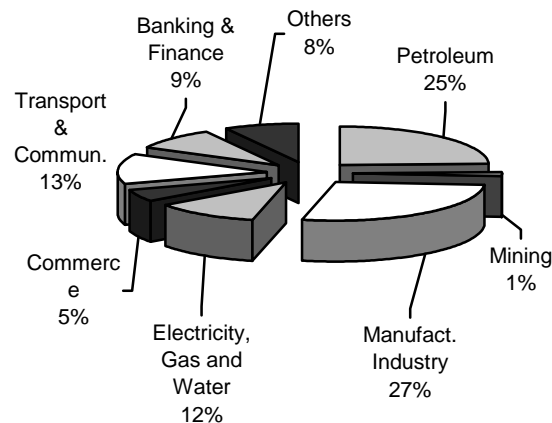
⁴³ Note again that this line of reasoning implies that the real exchange rate is defined as the ratio of non-tradables prices to tradables prices.

Table 11. Changes in Value Added and Sources of Growth
(National Survey of Large Enterprises, 1993-1998)

	Value added Change (%)	Contributions (in %)			Number of enterprises
		Labor	Capital	TFP	
<i>By product orientation</i>					
Non-Tradable	5.2	9.4	23.6	22.2	87
Tradable	-1.2	1.2	0.6	-3.0	219
<i>By individual export performance</i>					
Little change in exports	-13.8	1.7	-1.5	-13.9	93
Moderate growth in exports	8.5	2.5	5.2	0.9	89
High growth in exports	22.9	4.3	4.8	13.9	32

Source: BOUR [2002] (Table 8, p.11)

Chart 18. Foreign Direct Investment Stock by Sector
(1992-2001, Cumulative)



Source : Dir. Nac. De Cuentas Internacionales

What explains this apparent productivity puzzle ? Although in-depth studies of the phenomenon are yet to be conducted, it seems that four pervasive market distortions hampered economic development and productivity in Argentina. *First, tax evasion*, which has already been discussed in the previous section, and which clearly biases competition. It has been recently estimated that in some key sectors of the economy such as meat processing and construction, tax evasion accounts for about 45 to 55% of the country's huge productivity gap with the United States⁴⁴. *Second, the lack of proper*

⁴⁴ MacKinsey Quarterly, op.cit. 2002.

regulation and competition frameworks in several sectors of the economy. In telecommunications and water, regulatory commissions have simply been captured by the largest firms operating in these markets⁴⁵, while in other sectors, a multitude of (sometimes overlapping) regulatory barriers are biasing competition in favor of small inefficient companies. In this respect, the hands-off approach adopted by the architects of the Convertibility Plan in the context of the privatization program has essentially resulted in a transfer of economic rents, but has failed to generate more competition. Oddly enough, the massive privatization scheme has favored big industrial conglomerates while excessive regulations and high tax pressure have severely handicapped SMEs operating in the formal sector. *The third distortion is the rigidity of labor market regulations*, which has severely limited price adjustments and made recourse to flexible job contracts extremely difficult. As a result, the country suffered from an unsustainable combination of persistent current account deficits throughout the 1990s (3.5% of GDP on average) and rising unemployment levels. The effects on labor market rigidities on output and employment were indeed dramatic. First, in the absence of relative price adjustments (both at the level of the real exchange rate and wages), shocks were absorbed through large output contraction, at the expense of employment⁴⁶; second, most investment decisions made by large companies in the early 1990s did factor in relatively high direct and indirect labor costs in using more capital-intensive technology, which in turn negatively affected unskilled and non-unionized workers⁴⁷. As a result, although industrial production increased by 43% from 1991 to 1998, industrial employment contracted by 17%. In general, this situation led to a spectacular rise in unemployment as well as a worsening of the income distribution. *The fourth distortion is the high cost of bank lending in real terms*, owing to a combination of high administrative costs stemming from the low monetization of the economy (29% GDP), inefficiencies of the payment system, credit risk and sizable provisioning expenses associated with non-performing loans, as pointed out in section II. These problems reflect the underdevelopment of domestic financial markets in Argentina, despite significant improvement over the last decade, which have exacerbated the credit crunch effects of the financial crises of the 1990s and prevented reallocation of resources in a timely manner⁴⁸.

These distortions are typical examples of the kind of “illiberal enclaves” pointed out by WISE & ROETT [2000], together with delays in implementing structural reforms at the provincial level, which were politically necessary to gain support for the Convertibility plan. *The political economy of reforms made some trade-offs necessary but the net result was that the macroeconomic credibility of the convertibility plan clashed with serious microeconomic problems present in most regions of Argentina.*

⁴⁵ WISE & ROETT [2000], p.109. See also MANZETTI [1997] for an overview of privatization and regulation in Chile and Argentina,

⁴⁶ For an interesting comparison between Argentina and Hong-Kong under a currency board regime, see *Quarterly Bulletin* 5/2002, Hong-Kong Monetary Authority, pp.5-6. The main conclusion is that the short-run effect of output decline on unemployment was twice as large in Argentina as in Hong-Kong during the 1990s.

⁴⁷ See BAER, ELOSEGUI & GALLO [2002], p.69.

⁴⁸ See CABALLERO [2000], pp.10-18.

b. Capital Inflows: of Economic Booms and Sudden Stops

Argentina is also a good example of the excessive dependence on capital inflows, which not only led to a booming economy through consumption and investment channels, but made the economy extremely vulnerable to reversals. As in the case of East-Asian countries in the early 1990s, capital account opening and financial deregulation, combined with low interest rates in the US and Japan, favored increased capital flows to Argentina. These flows were initially a welcome supplement to national savings to finance investment and growth, but *their role evolved from additionality to partial substitution*: the share of FDI in total investment increased from 9% on average in 1991-1995 to 22.9% on average from 1996 to 2000; likewise, national saving remained subdued in the first half the nineties and decreased after 1995 whereas foreign saving had to make up for the rest and accounted for 21% of domestic saving between 1996 and 2000 (Chart 19). Other economic indicators suggest that sustained high consumption, low domestic saving and rapid domestic credit expansion illustrate the impact of net capital inflows: as shown in Chart 20, consumption remained fairly stable throughout the 1990s, accounting for more than 80% of GDP, whereas domestic saving remained very low (18.5% of GDP on average). Interestingly, the share of domestic credit to GDP almost doubled during the whole period, further illustrating the booming of the economy.

Chart 19. National and Foreign Saving
(% GDP)

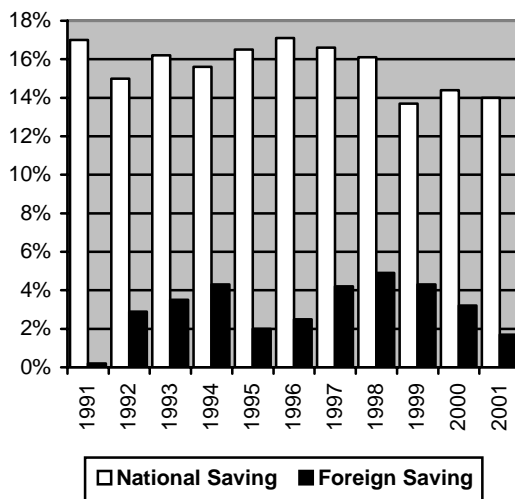
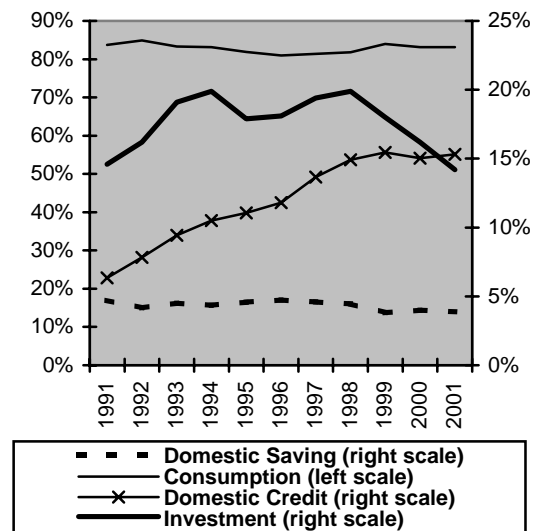


Chart 20. Selected Economic Ratios
(% GDP)



Source: IFS, MECON

Although the share of non-FDI inflows in total capital flows decreased throughout the decade, the dependency of Argentina upon capital flows makes it an ideal candidate for the well-known “sudden stop” story *à la* Calvo: a large and unexpected reduction in capital flows may well trigger huge shocks on investment, credit and consumption, ultimately putting at risk private and public solvency⁴⁹. As the argument goes (CALVO *et al.* [2002]), the massive capital inflows to Latin America in the early 1990s all of a sudden came to a standstill following Russia’s financial crisis and its subsequent partial debt default in August 1998. Two factors were at play: first, a emerging market aversion factor among foreign investors, and second, higher US interest rates during the second half of the 1990s. This forced drastic current account adjustments in the whole region as well as real exchange rate realignments in countries such as Brazil and Chile. This would suggest that Argentina’s agony was triggered by capital flows “sudden stop” , i.e. by exogenous factors. Does the story hold in the case of Argentina, and why Argentina versus other countries? From a purely factual perspective, this argument does not quite hold. First of all, although sovereign spreads increased sharply in all Latin American countries following the Russian default, Argentina’s spreads remained *below* those of Brazil, Venezuela and Ecuador until the end of 2000. Brazil’s spreads were even significantly higher in 1998-1999. Arguably, Mexican spreads decreased gradually below that of Argentina after the last quarter of 1999, but on average, *Argentina did not suffer from more market aversion than other LAC countries*. This is reflected in the behavior of capital inflows: as shown in Chart 21, Argentina continued to attract more capital flows as share of GDP than other countries, even with the “sudden stop” effect, until the late 2000. In addition, the current account adjustment which followed the 1998 capital crunch, was actually very small in Argentina in 1999, compared to that of Brazil, Chile, Colombia or Ecuador⁵⁰. Yet, during the same period, Argentina’s economy performed worse than all the other countries of the region. *This suggests that the “sudden stop” story was not at the root of Argentina’s economic meltdown, although certainly acted as an amplifier of the domestic problems discussed in relation with productivity trends*⁵¹. In other words, the reduction of capital inflows in Argentina was not an exogenous trigger of the crisis. If anything, it signaled the end of the illusion with regard to the sustainability of the Convertibility Plan.

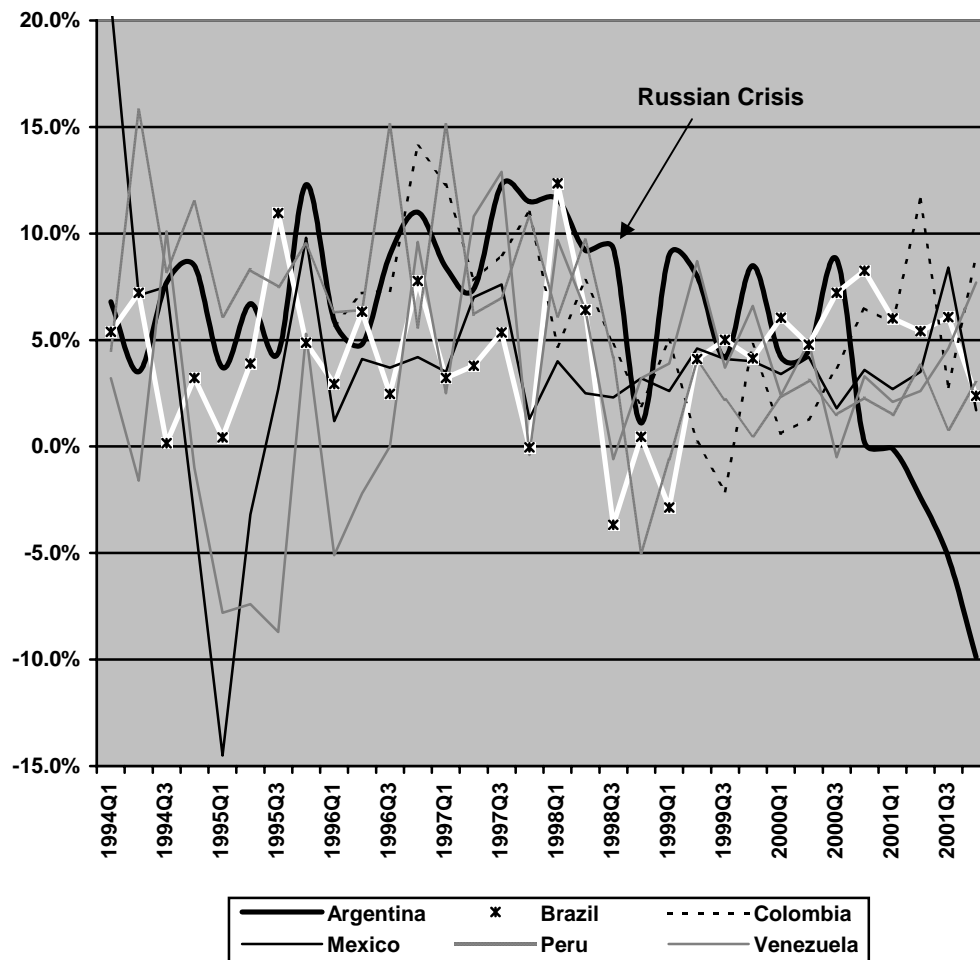
⁴⁹ See CALVO [1998] and [2002] for the full demonstration of the argument. The term “sudden stop” was coined by DORNBUSH *et al.* [1995], inspired by a banker’s adage “*it is not speed that kills, it is the sudden stop*”.

⁵⁰ According to CALVO *et al.* [2002], p.11, the current account change in percentage of 1998 imports was of 6.1% for Argentina, versus 10.6% in Brazil, 18.8% in Chile, 31.3% in Colombia and almost 50% in Ecuador. It is only in 2001 that current account adjustment has really hit Argentina, with a 21% change compared to 1998.

⁵¹ See PERRY & SERVÉN [2002], for an in-depth presentation of this point, including tests on the empirical determinants of capital inflows between 1997 and 2001.

Conclusion – Despite an ambitious reform package implemented in the early nineties, growth was really the “missing link” in Argentina’s experiment of the 1990s. Impressive capital inflows throughout most of the 1990s associated with a spectacular privatization program and half-implemented reforms did not transform the economy into a competitive efficient one. As a result, total factor productivity declined over time, leading to an unstable growth pattern. On the face of it, it is hard to understand that Argentina could be made out as an economic *development* model. Argentina’s reforms remained confined to liberalization and deregulation, which were certainly necessary but by no means sufficient conditions for economic take-off. In retrospect, the striking feature of the Convertibility Plan is the absence of a coherent development strategy to steer the political economy in the longer run, as pointed by WISE & ROETT [2000].

Chart 21. Gross Capital Inflows in Selected LAC countries, 1993-2001
(% GDP)



Source: IFS

5. Some Policy Lessons

As argued in the previous sections, the Argentine default was ultimately the result of a combination of different factors, in which the currency board arrangement played a significant role, both directly and indirectly. It also took place in the context of volatile capital markets and spillover effects from other financial crises in emerging markets. As such, the Argentine story raises some fundamental policy questions for developing countries: the first one is the *cost-benefit analysis of capital account convertibility for emerging countries*; the second is the *never-ending puzzle of what constitutes an optimal exchange rate regime*; the third is the *risks of debt financing for long-term growth*, and the last one is the *role of the International Financial Institutions* in terms of policy advice and possible stopgap measures.

a. Capital Account Convertibility : Pitfalls on the Eldorado Road

What the recent crises confirm is that there seems to exist a *trade-off between the benefits of a rapidly evolving and largely unregulated financial system attracting large portfolio investments and the costs of financial vulnerability*. This is not totally a surprise: although economic theory tells us that the opening of domestic capital markets offers more opportunities to diversify risks and seek other investment prospects, capital flows may also create problems if they only serve to finance a consumption boom, following a typical “boom-bust” cycle. Therefore, domestic effects of foreign capital flows are heavily dependent upon absorption capacities, the efficiency of the banking system, and the productivity of investments.

It is often believed that capital account convertibility is associated with *short term costs* and *long term gains*. It may not be that simple. First, there is mixed evidence that capital account liberalization promotes long-run economic growth. Some studies have found a stable positive correlation between growth and indicators of financial development, but others identify considerable geographical variation⁵². Recent research finds that although international financial integration is *associated* with economic growth (high levels of GDP per capita and strong institutions), empirical evidence does not support the view that international integration stimulates economic growth⁵³. Some studies actually suggest that the effect of financial opening on the relative volatility of consumption is non-linear, showing negative effects for most developing countries but positive effects for industrialized countries⁵⁴. The evidence is therefore not convincing so far, as it is difficult to isolate financial integration from a whole set of institution building issues. The risks involved actually reinforce the argument for serious financial reforms. This is actually what happened in the aftermath of most banking crises in the past, especially in Latin America, as illustrated by a recent empirical study, which finds that financial

⁵² See EDISON, KLEIN *et al.* [2002] for a survey of the empirical literature to date, or MALHOTRA [1997].

⁵³ See EDISON, LEVINE *et al.* [2002].

⁵⁴ See KOSE *et al.* [2003]. The results of the study show that although, on average, the volatility of output growth has, on average, declined in the 1990s relative to the three earlier decades, the volatility of consumption growth relative to output income growth has increased for more financially integrated developing countries in the 1990s.

liberalization fuels institutional reforms, typically in the aftermath of crises⁵⁵. Quite disturbingly, this would suggest that there is a learning-by-doing trend in financial development, which makes crises almost unavoidable. Yet, the experience of the 1990s calls for caution regarding this “Shumpeterian view” of financial crises, as the destruction of institutions and the credibility damages associated therewith can prove difficult to overcome from a political economy perspective, as evidenced by the case of Argentina.

To sum up, the link between “short-term pain” and “long-term gain” may not be linear, and as put by BHAGWATI [2002] in an essay exploring the “capital myth” (pp.6-7), “*any nation contemplating the embrace of free capital mobility [...] must reckon with these costs and weight them by the not negligible probability of running into a crisis*”. In crude terms, the cost-benefit analysis of international financial integration looks like a puzzle with missing pieces: on the one hand, short-term costs are pretty clear and unfortunately well documented, but on the other hand, the long-term benefits are intuitively plausible yet not empirically robust. As the case of Argentina sadly illustrates, sustainable financial integration requires careful institution building in order to design appropriate regulations and supervision instruments, because financial systems are subject to currency risks regardless of the exchange regime adopted by a country⁵⁶. Such a process obviously takes time and is not easy to “model”. It is about time to fully recognize this crucial dimension.

b. Debt Financing: are there Alternatives to the “Original Sin” ?

One of the eye-catching features of the Argentine crisis is that even if one country’s debt ratios to GDP appear to be “reasonable” by world standards, a classic debt crisis is not precluded. To a large extent, the precipice-flirting episode of Brazil in the Summer of 2002 is very similar. Arguably, the colossal debt-service ratios signaled clear vulnerabilities in terms of liquidity in both countries but not in terms of long-term solvency. One important element in the equation is the “*original sin*”, i.e. borrowing in US dollars as opposed to domestic currency, which creates severe balance sheet mismatches⁵⁷ although dollar interest rates are often lower than domestic ones. CABALLERO & KRISHNAMURTY [2002] argue that the choice over liability denomination is equivalent to a choice over how much insurance to purchase against countries when international collateral is scarce. According to their analysis, most emerging and developing countries suffer from financial underdevelopment, which reduces domestic liquidity and jack up financial volatility. This distortion ultimately leads to “underinsurance” against external crises by the private sector, i.e. excessive external borrowing in Dollar, especially when foreign capital is abundant. Other distortions can amplify the “underinsurance” problem, such as bailout expectations or implicit/explicit policy commitments to rule out currency devaluation. In this respect, the effect of the Convertibility Plan was very similar to the implicit commitment by East-Asian Central Banks to absorb the risks of exchange rate movements on behalf of investors. Two main lessons can be drawn from the underinsurance problem: the first is that financial

⁵⁵ KAMINSKY & SCHMULKER [2002].

⁵⁶ See BURDISO *et al.* [2002].

⁵⁷ See HAUSMANN, PANIZZA & STEIN [2001], p.401

deepening is badly needed in domestic markets, which involves once again a crucial institution building dimension, as pointed out above. The second is that there may be a less stringent role for monetary and exchange rate policies than the compulsive concern about inflation targets. What is needed in most countries is both price stability and some exchange rate flexibility, but until a certain threshold where further debt accumulation leads to lower growth, which can be depicted in a kind of Laffer curve. Empirically, recent research conducted by PATILLO *et alt.* [2002] for 93 developing countries (including Argentina) over the period 1969-1998 confirms the non-linear effect of debt on growth, and finds that the average impact of debt on per capita growth appears to become negative for debt levels above 160-170% of exports and 35-40% of GDP. Interestingly, although it is extremely difficult to identify a clear turning point, it would seem that for the average country in the sample, doubling the debt level would reduce growth, suggesting that the average country is already on the “wrong” side of the debt Laffer curve. *Quantification exercises are always difficult, especially in the context of panel data where country specifics are highly diluted, yet they provide some useful illustration of the possible limitations of debt financing in the institutional and political context of most developing countries.* As to the second question, i.e. the effect of growth on debt, it is trivially linked to liquidity and solvency issues. Empirical research (EASTERLY [2001]) indicates that between 1975 and 1994, slow growth was an obvious trigger for debt accumulating policies in most countries, reflecting a lack of fiscal adjustment. Debt explosion was thus the counterpart of growth “implosion”, but more importantly, *this type of relationship helps understand why some debt levels that were sustainable under a previous growth regime can very well become unsustainable under a new regime, ultimately playing an important role in triggering a crisis. Argentina was a perfect illustration of this paradox in 2001.*

To sum up, excessive reliance on debt financing –including multilateral debt- is a serious concern, especially in the light of financial market underdevelopment. Limiting the “original sin” problem is certainly desirable in order to limit currency mismatch, and this can be done through a variety of ways. But more importantly, it seems urgent to adopt more prudent debt management strategies in general. Both in terms of levels and debt service implications. In particular, it is crucial to become more realistic about growth assumptions used in classic debt sustainability analyses in order to better gauge the non-linear relationship between growth and debt.

c. Exchange Rate Regime: Beyond the “Fixed versus Flexible” Debate

The debate about appropriate exchange rate regimes has raged over the last decade, and issues have been discussed at great length. It not only focused on the merits of alternative regimes in disinflation programs, but also on the costs of failure, on credibility and on reputational issues. But in practice, the series of recent currency crises both in industrial countries (the EMS crisis in 1992/93) and in emerging countries - broadly defined - (Mexico in 1995, East-Asia in 1997, Russia in 1998 and Argentina in 2001/02) has revealed the inherent fragility of fixed or semi-fixed rates. This is much more serious than previously thought with the integration of world capital markets. The implication is straightforward: *for most countries, the choice between fixed and flexible exchange rate*

is becoming increasingly irrelevant. As documented in OBSFELD & ROGOFF [1995] and confirmed by the Argentine tragedy, aside from a few minor tourist economies, oil sheikdom and heavily dependent principalities, few fixed exchange rates have survived the past several years intact⁵⁸. One is therefore left with various degrees of exchange rate floating, but it is well known that flexible rates tend to be extremely volatile in emerging economies, as are wages and prices, with large balance sheet effects on liabilities expressed in foreign currency. *Between floating and the “fear of floating”, are there alternatives available ? The short answer is “not really”.* Different combinations and exchange regimes have been tried, but all have their drawbacks over time. This has prompted suggestions to “import” exchange stability by simply adopting another country’s legal tender, i.e. *dollarization*⁵⁹. However, full dollarization is just an extreme form of exchange rate fixing, and does not constitute a viable “alternative” to the exchange rate puzzle discussed before. The logic of dollarization, i.e. *no currency, no exchange rate risk, no crisis*, is exactly what was behind Argentina’s Convertibility Plan. However, as is well known from the optimal currency area literature, the sustainability of this type of arrangement depends on various factors including trade openness, economic structure and types of economic shocks. In this respect, unless an economy is sufficiently integrated with the US economy, permanent adoption of the US Dollar as the sole legal tender may not be sustainable in terms of competitiveness. In addition, economic adjustment in the face of economic shocks relies exclusively on fiscal policy, which is not only slow but also politically delicate. In other words, dollarization may well take care of the currency risk but does by no means remove the country risk. All this means that the straightjacket imposed by dollarization may prove unbearable unless domestic markets are extremely flexible so as to allow quick relative price adjustments, a condition which few emerging countries meet. Interestingly, although the jury is still out in both Ecuador and El Salvador (the most recent cases of dollarization), the overvaluation of their real exchange rate is already threatening their international and regional competitiveness, creating friction between their trade and non-trade sectors. If exchange rate stability is to be achieved, working out some regional arrangements concomitant with existing trade frameworks (e.g. Mercosur) would seem to make more sense than responding to what WYPLOSZ [2002b] coined as being a “*gringo complex*”.

The menu of options available to emerging countries to limit large exchange rate swings also include capital and exchange controls. Both measures are different as are the likely consequences. Basically, capital "controls" can take the form of diverse restrictions on

⁵⁸ If one excludes the two CFA Franc zones in Western and Central Africa, tied to the EURO through a French Treasury guarantee, as well as oil sheikdoms, small islands and highly dependent principalities, the list is limited to approximately 15 countries according to the IMF classification of exchange rate arrangements in 2002.

⁵⁹ See SCHULER, K. "Encouraging Official Dollarization in Emerging Markets," Staff Report, Office of the Chairman, Joint Economic Committee, U.S. Congress, April 1999. Note that although the terms “currency substitution” and “dollarization” are often used in the literature to describe the extent to which foreign money (currency and deposits) substitutes for domestic money in its three traditional functions (unit of account, medium of exchange, and store-of-value), what is referred to in this discussion is the adoption of the US Dollar (or any major currency) as the sole legal tender for all transactions, i.e. *full dollarization*.

capital flows (traditionally, inflows) or taxes on certain capital transactions⁶⁰, and limit the degree of capital account convertibility. Exchange controls can take equally different forms, but essentially limit the availability or use of foreign exchange as such. These measures mostly affect current account transactions (for residents or non-residents) but the distinction is sometimes much more complicated. Obvious examples of exchange controls include limited internal convertibility⁶¹, or foreign exchange surrender requirements for exporters which is a particular case. The effectiveness of all these measures -capital controls and exchange restrictions- is subject to a large debate, but experience suggests that they tend to be difficult as well as costly to enforce over time. The case for a tax on capital transactions, aimed at limiting speculative inflows and outflows, is certainly the most sensible proposal since it is market-based, whereas the others are more distortionary and may foster the development of black foreign exchange markets. Yet, they might offer some breathing space as stopgap measures, but they can only have some credibility if they are associated with serious structural reforms to strengthen the domestic financial system. In other words, it should be clear that capital and exchange controls are not a substitute for reform. Likewise, if they are used in the context of an overvalued exchange rate, they may well evolve from a temporary defense against speculation into a permanent system of trade protection⁶².

To sum up, at this juncture, there is no magic bullet which can alleviate the “fear of floating” syndrome, except perhaps some stopgap measures such as market-based exchange controls in the short-run, and some better regional coordination as a medium-run objective. However, stopgap measures offer no lasting solution per se, as their credibility heavily depends on the reform context in which they are put in place.

d. The Role of the IFIs: A Perception Failure ?

One of the most specific features of the Argentine tragedy is that the country operated almost continuously under the auspices of close scrutiny of an IMF-supported program between 1991 and 2001⁶³. The IMF was heavily involved in exchange rate, fiscal and monetary policies, as well as in debt sustainability assessments, and no “country ownership” type of public relation arguments can alter this fact. In no other country, except for Russia (1998) and Brazil (2002) did the IMF provide exceptionally large financial support to a member already under a IMF-supported program. Under the different stand-by and other arrangements, the IMF agreed to disburse about US\$ 24 billion to Argentina between 1991 and 2001, and most of it was effectively drawn. The involvement of the World Bank and the Inter-American Development Bank has been

⁶⁰ A widely publicized example is Chile, which imposed a one-year minimum holding period on capital inflows larger than US\$10'000 as well as a 10% unremunerated reserve requirement (also with a one-year minimum holding period) for all external liabilities that do not result in an increase in the stock of capital. Restrictions have been removed gradually and eliminated in July 2001.

⁶¹ The issue of convertibility hides a minefield of technical ambiguities. Here, internal convertibility is defined as the ability of residents to acquire and maintain domestic holdings of assets denominated in foreign currencies without any restriction.

⁶² EDWARDS [1995]. See also KRUGMAN [1998].

⁶³ MUSSA [2002], p.3.

equally deep throughout the decade with steady disbursements focusing on social developments and institution building. To the extent that the Argentine tragedy is a classic debt crisis, both the IMF and the World Bank were intimately involved, and this raises some questions about the role of these institutions in the lead-up to the crisis. In particular, the Fund's main explanation for previous slips in other crises –that it was practicing “battlefield medicine”–is less credible in this case⁶⁴. Which policy recommendations did the Fund prescribe or perhaps failed to prescribe to prevent the Argentine default ? The official *ex-post* story is that the IMF indeed bears some responsibility in the crisis, for not having pressed for more stringent fiscal adjustment all along, and for being unusually lax with Argentina⁶⁵. Given the peculiar fiscal regime of Argentina covered in section III, this point is certainly well taken, especially after the Tequila crisis. It is all the more puzzling because under a currency board arrangement, fiscal policy becomes the only tool of macroeconomic management, in particular for would-be buyers of new debt. Yet, it has to be replaced in the political context of the late 1990s, where Argentina was the “poster child” of economic reforms, and where the currency board arrangements was praised as being one possible ultimate fix. The address of President Menem at the IMF/World Bank Annual Meetings in October 1999, was the ultimate recognition of the “good reformer” status of Argentina. However, during the two years preceding the crisis, it is not the lack of fiscal surveillance which is to blame, but perhaps the excessive reliance on the simplistic mechanics of fiscal adjustment for debt dynamics purposes, as argued in section IIIc. Arguably, it is not obvious that something else could be attempted apart from debt restructuring, because it was already too late.

Apart from the fiscal dimension, one other area of policy advice deserves scrutiny, i.e. exchange rate policy. Interestingly, MUSSA [2002] reports that the IMF was initially opposed to the peso-dollar parity and was reluctant to back the Convertibility plan, which was a personal creation of Domingo Cavallo. Whatever the founding myth behind the Convertibility Plan, what is certainly moot is the Fund's apparent absence of questioning of the adequacy and sustainability of the arrangement over time. Eventually the IMF ended up massively supporting a non-viable arrangement. Once again, given the well-known fiscal weaknesses in Argentina, excessive faith in a system allowing continuous borrowing in dollars at an overvalued exchange rate was a daring gamble. Although there was no *obvious* way out to the exchange rate situation of Argentina, the IMF stance vis-à-vis the sustainability of the currency board is at best puzzling, at worst symptomatic of the debt trap which bound together both the Argentine authorities and the Fund to each other.

Lastly, when the crisis is in the making with high capital market volatility, is there a role for large IMF packages such as the one granted to Argentina in 2001 ? The “lender of last resort” issue has been discussed at length since the East-Asian and Russian crises⁶⁶, and it is widely understood that the IMF appears ill-equipped to fulfill that role. It cannot print money, it cannot lend freely - its loans being sliced into tranches subject to policy conditionalities, it does not lend at penal interest rates against collateral, and lastly, its

⁶⁴ *The Economist*, 28 September 2002.

⁶⁵ MUSSA [2002].

⁶⁶ See RADELET & SACHS [1998], BUCHS [2004].

resources are limited. Beyond feasibility questions, there are also major *desirability* issues. It is not obvious that a credible lender of last resort would do much in the case of self-fulfilling panic, because the presence alone of the IMF on the scene gives all the confidence of seeing an ambulance outside one's door, and its "signaling effect" for further investment lending ("catalytic official finance") appears at best limited⁶⁷. In fact, its record of intervention shows that it has never been the main lender of last resort⁶⁸. In the Peso crisis in 1995 for instance, the United States provided most of the rescue funds, and in East-Asia, the IMF "bail-outs" were modest compared to capital outflows. In the case of Russia, the "package" of international lenders was even smaller, with \$22.6 billion in new credits spread over 1998 and 1999, including a \$11.2 billion new IMF loan. In the case of Brazil in the Summer of 2002, when debt sustainability was suddenly questioned in the light of the possible outcome of the upcoming presidential elections, the IMF package came up with a \$30 billion loan, "incidentally" the size of the cumulated exposure of the four major US investment banks on Brazil. Second, there is a chance that IMF interventions increase "moral hazard" problems in bailing out losers and distorting market rules, as argued in the "Metzler Report"⁶⁹. Although one can easily dismiss the cost implication of bailouts given the small size of funds disbursed so far and the good repayment record of crisis countries⁷⁰, the moral hazard argument is sometimes overplayed. To date, the only "classic" example of moral hazard is the Russian crisis in 1998, where foreign investors took breathtaking risks on the Russian Treasury Bill market until the very last minute, not only because it was highly profitable, but also on the *expectation* that Russia was too big to fail⁷¹. When it comes to other recent financial crises including Argentina's in 2001, it is difficult to make a strong case for moral hazard problems, however, as investors' position declined steadily throughout 2001. But even if one accepts the relevance of moral hazard in some cases, how to address the issue is a totally different story. Unfortunately, one of the lessons of the Argentine crisis is that having an alternative "hands-off" approach can easily fuel investors panic in other countries and indirectly contribute to propagating the crisis at the regional level, as it happened in Uruguay, Paraguay and Brazil in 2002. While on the one hand, international bailouts may be a contributing factor to financial crises through moral hazard effects, on the other hand, the absence of bailouts may have exactly the same effect because of financial contagion problem.

Obviously, financial crisis management is a complex issue and it is difficult to come up with simple quick-fixes. It would seem, however, that when a country faces a pretty serious debt *stock* problem, the room for debt flow adjustments may be very limited and only postpone the problem. The only solution in such extreme case is to finally tackle the stock problem. In this respect, the current debate about the feasibility of a sovereign

⁶⁷ See COTTARELLI & GIANNINI [2002].

⁶⁸ See SACHS & RADELET [1998], p.34, and "Toward a New Financial System", *The Economist*, 11 April 1998, pp.64-66.

⁶⁹ See JEANNE & ZETTLEMEYER [2001], and INTERNATIONAL FINANCIAL INSTITUTIONS ADVISORY COMMISSION [2000]

⁷⁰ See JEANNE & ZETTLEMEYER [2001].

⁷¹ See BLUSTEIN [2001].

bankruptcy scheme in conjunction with various forms of market-based approaches (exchange offers and collection action clauses) is promising, albeit politically sensitive⁷².

At this juncture many questions remain with respect to the role of the IFIs and the IMF in particular before and during the Argentine meltdown. In retrospect, it would appear that the risks involved in the Currency Board arrangement had not been properly assessed, both in terms of fiscal and exchange rate policies, and in terms of an overall growth strategy. This is certainly a *perception* failure involving all “partners in development” in a context of market euphoria. In terms of crisis management, one may argue that designing an operational international bankruptcy framework represents the ultimate acid test of the commitment of the international community to reforming the global financial architecture.

6. Conclusion: Has the Nature of Crises really Changed ?

Economic history is awash with financial crises, many of which happened in or affected directly Argentina. The 2001 default was particularly severe and disruptive, and certainly has far-reaching consequences for the social, political and economic reconstruction of the country. However, it seems that the nature of the crisis was nothing really new. In essence, the 2001 Argentine crisis fits in the pattern of the 1990s crises, where greater financial integration increased the volatility of capital flows and generated large spillover effects across emerging markets. Capital volatility, triggered by monetary policy in the US and homegrown factors, was indeed the general context of the 2001 default, and as argued in section IVb, capital flows retrenchment certainly acted as an amplifier but not as a trigger for the crisis. The very nature of the crisis is not fundamentally different from the pattern of inconsistent macroeconomic policies which triggered many of the speculative attacks against the Peso in the 1970s and the 1980s⁷³. Although the problem was for once not monetary, the time inconsistency problem of the exchange rate policy followed between 1991 and 2001, together with the lack of nationally *coherent* fiscal and development policies, led to a classic debt solvency trap. From this perspective, the 2001 default does not provide for a new “type” of crisis. Despite less obvious features than in the 1980s for instance, the end of the Convertibility Plan was a classic balance of payment crisis triggered by unsustainable policies in a much more volatile external environment. This being said, the real sector of the economy during the 1990s is certainly one of the most overlooked elements in the crisis, and certainly led to overoptimistic expectations about the capacity of the Argentine economy to rebound. In addition, even if the 2001 crisis was not fundamentally different from previous crisis episodes, its subsequent handling in 2002 proved dramatic for the entire financial system of the country.

However, as shown in section III, it is fair to recognize that the decisive elements in debt sustainability involved a fair amount of judgment, and *were ambiguous to most observers*

⁷² See KRUEGER [2001].

⁷³ See CHOUEREI & KAMINSKY [1999]

before 2001. Risks were clearly present, but as always, the trigger occurs when the “market” decides that the debt is no longer sustainable, and subsequently validates it. Arguably, the situation deteriorated in Argentina in 2000-2001 and the floodgate were opened when changes were introduced in the Convertibility Plan framework, but the structural vulnerabilities of the country were by no means new. The rest is a matter of assumptions, context, and more fundamentally, *perceptions*.

References

- AGENOR, P.R., MONTIEL, Development Economics, Princeton University Press, Princeton NJ, 1996.
- ALBEROLA, E., LOPEZ, H., SERVÉN, L., "Tango with the Gringo: The Hard Peg and Real Misalignment in Argentina", *Mimeo*, April 2003.
- ALBORNOZ, F., ESPANOL, P., KALANTZIS, Y., "From Microeconomic Change to Macroeconomic Vulnerability: Imported Inputs, Productivity Gains and Export Performance in Argentina during the Nineties", *Mimeo*, Paper presented at the 8th Latin American and Caribbean Economic Association (LACEA) in Puebla (Mexico) October 2003.
- BAER, W., ELOSEGUI, P., GALLO, A., "The Achievements and Failures of Argentina's Neo-Liberal Economic Policies", *Oxford Development Studies*, Vol.30, No.1, 2002, pp.63-85.
- BALINO, T., BENNET A, BORENZSTEIN, *Monetary Policy in Dollarized Economies*, IMF Occasional Paper #171, 1999.
- BARRO, P., JORRATT, M., "Estimación de la evasión tributario en Chile", Servicio de Impuestos Internos (Chile), *Mimeo*, Junio 1999, p.18.
- BHAGWATI, J., The Wind of the Hundred Days, The MIT Press, Cambridge, 2002.
- BLUSTEIN, P., The Chastening: Inside the Crisis that Rocketed the Global Financial System and Humbled the IMF, The Perseus Books Group, Cambridge, 2001.
- BOUR, E., "Productivity, Competitiveness and Enterprises in Argentina: The Convertibility Period", *Mimeo*, FIEL (Fundación de Investigaciones Económicas Latinoamericanas), 2002 (Paper presented at the XIII World Congress of the International Economic Association in Lisbon, September 2002).
- BUCHS, T., "Consequences of Financial Globalization for Policy Making", *Aussenwirtschaft*, 2004/I (forthcoming).
- BURDISO, T., COHEN SABAAN, V., D'AMATO, L., "The Argentine Banking and Exchange Rate Crisis of 2001. Can we Learn Something New about Financial Crisis", *Mimeo*, Banco Central de la Republica Argentina, May 2002.
- CABALLERO, R., "Macroeconomic Volatility in Latin America: a View and Three Case Studies", MIT, *Mimeo*, June 2000.
- CABALLERO, R., KRISHNAMURTY, A., "Excessive Dollar Debt: Financial Development and Underinsurance", MIT, *mimeo*, April 2002 (forthcoming in *Journal of Finance*)
- CALVO, G., "Capital Flows and Capital Market Crises: the Simple Economics of Sudden Stops", *Journal of Applied Economics*, Vol.1 No1, November 1998, pp.35-54.

CALVO, G., IZQUIERDO, A., TALVI, E., “Sudden Stops, the Real Exchange Rate and Fiscal Sustainability: Argentina’s Lessons”, Background Paper for the IADB Seminar on “*The Resurgence of Macro Crises: Causes and Implications for Latin America*”, *Mimeo*, June 2002.

CATAO, L., “Intermediation Spreads in a Dual Economy: Argentina in the 1990s”, *IMF Working Paper WP/98/90*, June 1998.

CATAO, L., FALCETTI, E., “Determinants of Argentina’s External Trade”, *IMF Working Paper WP/99/21*, September 1999.

CHISARI, O., ESTACHE, A., ROMERO, C., “Winners and Losers from Utility Privatization in Argentina. Lessons from a General Equilibrium Model”, Centro de Estudios Económicos de la Regulación (Buenos Aires), *Working Paper No.3*. March 1999.

CHOUERI, N., KAMINSKY, G., “Has the Nature of Crises Changed ? A Quarter Century of Currency Crises in Argentina”, *IMF Working Paper WP/99/152*, November 1999.

COREMBERG, A.A., “¿El crecimiento de la Productividad de la Economía Argentina Durante la Década de los Noventa: Mito o Realidad?”, *Mimeo*, Asociación Argentina de Economía Política, XXXVIII Reunión Anual, Noviembre 2003.

COTTARELLI, C., GIANNINI, C., “Bedfellows, Hostages or Perfect Strangers ? Global Capital Markets and the Catalytic Effect of IMF Crisis Lending”, *IMF Working Paper WP/02/193*, November 2002.

DE LA TORRE, A., LEVY YEYATI, E., SCHMULKER, S., “Living and Dying with Hard Pegs: The Rise and Fall of Argentina’s Currency Board”, *Mimeo*, The World Bank, January 2003.

DORNBUSH, R., GODLFAJN, I., VALDÉS, R., “Currency crises and collapses”, *Brookings Papers on Economic Activity*, No 2, 1995, pp.219-293.

EASTERLY, W., “Growth Implosions, Debt Explosions and My Aunt Marilyn: Do Growth Slowdown Cause Public Debt Crises ?”, *World Bank Policy Research Working Paper*, No.2531, January 2001.

EASTERLY, W., FISCHER, S., “The Economics of the Government Budget Constraint”, *The World Bank Research Observer*, Vol.5, No.2, July 1990, pp.127-142.

EDISON, H., KLEIN, M., RICCI, L., SLOK, T., “Capital Account Liberalization and Economic Performance: Survey and Synthesis”, *IMF Working Paper WP/02/120*, July 2002.

EDISON, H., LEVINE, R., RICCI, L., SLOK, T., “International Financial Integration and Economic Growth”, *IMF Working Paper WP/02/145*, August 2002.

EDWARDS, S. (Ed.), Capital Controls, Exchange Rates and Monetary Policy in the World Economy, Cambridge University Press, Cambridge/New York, 1995.

ELSTRODT, H.P., LENERO, P., URDAPILLETA, E., “Micro Lessons for Argentina”, *The MacKinsey Quarterly*, No.2, 2002.

ESCUDE, G., GABRIELLI, M., SABBAN, V., *Evolución del Tipo de Cambio Real Multilateral de Argentina en los últimos 10 años*, Nota Técnica #11, Banco Central de la Republica Argentina, Octubre del 2001.

GALIANI, S., SANGUINETTI, P., “Wage Inequality and Trade Liberalization: Evidence from Argentina”, *Mimeo*, Universidad Torcuato Di Tella, November 2000.

GHOSH, A., GULDE, A.R., WOLF, C., “Currency Boards: The Ultimate Fix?”, *IMF Working Paper WP/98/8*, January 1998.

HANKE, S., SCHULER, K., “What went wrong in Argentina?”, *Central Banking Journal*, Vol.XII, No.3, February 2002, pp.43-48.

HAUSMANN, R., PANIZZA, U., STEIN, E., “Why Countries Float the Way they Float?”, *Journal of Development Economics*, Vol.66, No.2, December 2001, pp.387-414.

HAUSMANN, R., VELASCO, A., “The Argentine Collapse: Hard Money’s Soft Underbelly”, Harvard University, *Mimeo*, April 2002.

INTERNATIONAL FINANCIAL INSTITUTIONS ADVISORY COMMISSION, “*Report of the International Financial Institution Commission*”, Allan H. Metzler (Chairman), Washington DC, March 2000.

JEANNE, O., ZETTELMEYER, J., “International Bailouts, Moral Hazard and Conditionality”, *Economic Policy*, Vol.16, No.33, October 2001, pp.409-432.

KAMINSKY, G., SCHMULKER, S., “Short-Run Pain, Long-Run Gain. The Effects of Financial Liberalization”, *mimeo*, Paper presented at the George Washington University seminar on “Financial Liberalization: Blessing or Curse”, 30 May, 2002.

KEHOE, T., “What can we learn from the current crisis in Argentina?”, *Scottish Journal of Political Economy*, Vol.50, Issue 5, November 2003, pp.609-633.

KINDLEBERGER, C., Manias, Panics and Crashes: a History of Financial Crises, John Wiley & Sons, New York, 1979.

KOSE, A., PRASAD, E., TERONES, S., “Financial Integration and Macroeconomic Volatility”, *IMF Working Paper WP/03/50*, March 2003.

KRUEGER, A., “*Crisis Prevention and Resolution: Lessons from Argentina*”, Speech delivered at the NBER Conference on “The Argentina Crisis”, Cambridge, June 2002.

KRUEGER, A., “*International Financial Architecture for 2002: A New Approach to Sovereign Debt Restructuring*” Address given at the National Economists' Club Annual Members' Dinner American Enterprise Institute, Washington DC, November 26, 2001.

KRUGMAN, P., “The Confidence Game”, *The New Republic*, 8 October 1998.

LANTERI, L. “Fuentes de crecimiento en la Argentina y en los países recientemente industrializados del este del Asia. ¿ Podría pensarse en un milagro del crecimiento económico Argentino?”, *Documento de Trabajo #6*, Banco Central del la Republica Argentina, 1999.

LEVINE, R., "Financial Development and Economic Growth: Views and Agenda", *World Bank Working Paper* N°1678, Washington, October 1996.

MAIA, J.L., NICHOLSON, P., "El Stock de Capital y la Productividad Total de Los Factores en la Argentina", *Mimeo*, Dirección National de Coordinación de Políticas Macroeconómicas, MECON, Octubre 2003.

MALHOTRA, R., "The Evolution of the Emerging Equity Markets: The Case of East Asia", Ph.D Thesis, Brown University, 1997.

MANZETTI, L., "Privatization and Regulation: Lessons from Argentina and Chile", University of Miami, *The North-South Agenda Papers* No.24, April 1997.

MUSSA, M., Argentina and the Fund: From Triumph to Tragedy, *Policy Analysis in International Economics* No.67, Institute for International Economics, 2002.

NAGARAJAN, N., "MERCOSUR and trade diversion: what do the import figures tell us?", *European Commission Economic Papers* #129, July 1998.

OBSFELD, M., ROGOFF, K., "The Mirage of Fixed Exchange Rates", *Journal of Economic Perspectives*, Vol.9, Nu.4, Fall 1995, pp.73-96.

PAKKO, M., POLLARD, P., "Burgernomics: A Big Mac Guide to Purchasing Power Parity", *Federal Reserve Bank of St Louis Review*, November/December 2003, pp.9-27.

PATILLO, C., POIRSON, H., RICCI, R., "External Debt and Growth", *IMF Working Paper* WP/02/69, April 2002.

PERRY, G., SERVEN, L., "The Anatomy of a Multiple Crisis: Why was Argentina Special and What can we Learn from it ?", The World Bank, *Mimeo*, May 2002.

POWELL, A., "Argentina's Avoidable Crisis; Bad Luck, Bad Economics, Bad Politics, Bad Advice", *Mimeo*, Paper prepared for Brookings Trade Conference, May 2nd 2003, Washington DC.

RADELET, S., SACHS, J., "The East Asian Financial Crisis: Diagnosis, Remedies, Prospects", Harvard Institute for International Development, *Mimeo*, 1998.

SCHULER, K., "Fixing Argentina", *Cato Policy Analysis* No.445, Cato Institute, June 2002.

STIGLITZ, J., "Argentina Shortchanged", *The Washington Post*, 12 May 2002.

TALVI, E., VEGH, C., "Fiscal Policy Sustainability: A Basic Framework", *IADB Working Paper* R-372, December 1998.

TOMMASI, M., "Federalism in Argentina and the reforms of the 1990s", *Mimeo*, May 2002.

TOMMASI, M., SANGUINETTI, P., SAIEGH, S., "Fiscal Federalism in Argentina: Policies, Politics and Institutional Reform," Economia: Journal of the Latin America and the Caribbean Economic Association, Vol. 1, No.2, 2001, pp. 157-211.

WISE, C., ROETT, R. (Eds), Exchange Rate Politics in Latin America, Brookings Institution Press,, Washington DC, 2000.

WORLD ECONOMIC FORUM & HARVARD CENTER FOR ECONOMIC DEVELOPMENT, Global Competitiveness Report 2001-2002 , Oxford University Press, New York, 2001.

WYPLOSZ, C., “Fiscal Discipline in Emerging Market Countries. How to go about it?”, Graduate Institute of International Studies, *Mimeo*, May 2002a.

WYPLOSZ, C., “Lessons from the Coming Latin American Meltdown”, *International Herald Tribune*, August 14, 2002b.

YEATS, A., “Does MERCOSUR’s trade performance raise concerns about the effects of regional trade agreements?” *Policy Research Working Paper* #1729, The World Bank, 1997.

ANNEX I

Estimation of the Real Equilibrium Exchange Rate in Argentina 1990-2001

The concept of real equilibrium exchange rates has generated a large body of literature⁷⁴, driven by the emerging consensus that the standard purchasing power parity (PPP) is not an appropriate model of real equilibrium exchange rates owing to persistent deviations from PPP, which may be explained by permanent real shocks. The most famous examples include productivity differentials, based on the Samuelson-Balassa hypothesis, as well as the underlying net foreign assets position, which determines whether the exchange rate is consistent with the current account balance. These effects have been traditionally integrated in simple two good/two country models, where the real equilibrium exchange rate clears both internal and external balances. In these standard models, the real equilibrium exchange rates is defined as follows, $e = F(nfa, n)$, nfa denoting the net foreign assets position and n the relative sectoral prices between countries. More recently, other sources of deviations from PPP have been investigated, such as movements in commodity prices⁷⁵, interest rates differentials, fiscal balance and trade openness⁷⁶.

In the spirit of these different models, the following empirical relationship was estimated using quarterly data, from 1990 through 2001.

$$REER_t = \alpha_0 + \alpha_1 RELP_t + \alpha_2 NFA_t + \alpha_3 DEF_t + \alpha_4 RELCOM_t$$

Where

REER = real effective (trade-weighted) exchange rate, with an increase of REER denoting an appreciation. The trade weighting used are the average weighting for Argentina ten largest trading partners from 1990 to 2001. The variable is in log.

RELP = Relative sector prices, proxied by the indexed trade-weighted ratio of relative prices between Argentina and its main trading partners. The trade weighting used are the same as for REER and the variable is in log.

NFA = net foreign assets, proxied by the ratio of net foreign assets of the banking system to M2.⁷⁷

DEF = fiscal balance, as percentage of GDP.

RELCOM = Real commodity prices, proxied in this case by nominal Soy prices deflated by the MUV index, a composite index of the prices for manufactured exports from the G5 countries⁷⁸. The variable is in log.

It is expected that $\alpha_1 > 0$ and $\alpha_2 > 0$, but the sign of α_3 is not a priori clear-cut. Although a fiscal balance improvement is likely to be associated with a depreciation of the real exchange rate (because spending reduction may negatively affect domestic consumption of non-tradables and this lead to an decline in the price of the latter), a case can be made for a long-run real appreciation, as the positive net foreign assets generated by the initial real depreciation (as evidenced by a current account surplus) would have to be offset by a

⁷⁴ See ROGOFF [1996] for a survey.

⁷⁵ See CAHSIN, CESPEDDES & SAHAY [2002].

⁷⁶ See McDONALD & RICCI [2003].

⁷⁷ An alternative, and more common, way to normalize net foreign assets is to use GDP.

⁷⁸ The MUV series was extrapolated using annual data.

long run trade deficit (thus implying real appreciation). Finally, α_4 is expected to be positive, as higher commodity prices tends to drive up wages, thus leading to an increase in the price of non-tradable prices⁷⁹.

In order to investigate the existence of a long-run relationship among the model variables, the Johansen maximum likelihood estimation technique is used, through a vector error-correction specification. It is assumed that REER fluctuates around its long-term value, the four variables in the system are decomposed into transitory and permanent components, using the GONZALO & GRANGER [1995] decomposition. In this context, the first step is the investigate the order of integration of all variables entering the model. As shown in Table A1.1, all variables are I(1) at the 1% level.

Table A1.1 Unit Root Tests

Variable Name	Lag length	ADF Statistics	1% level	5% level	10% level
REER	5	-1.26	-3.51	-2.89	-2.58
dREER	4	-4.44*	-3.51	-2.89	-2.58
RELP	1	-2.06	-3.51	-2.89	-2.58
dRELP	3	-4.344*	-3.51	-2.89	-2.58
NFA	1	-2.95	-3.51	-2.89	-2.58
dNFA	0	-11.53*	-3.51	-2.89	-2.58
DF	4	-1.92	-3.51	-2.89	-2.58
dDF	5	-5.52*	-3.51	-2.89	-2.58
RELCOM	0	-1.57	-3.51	-2.89	-2.58
dRELCOM	0	-10.95*	-3.51	-2.89	-2.58

(*) Denotes the rejection of the null-hypothesis of a unit root at the 1% significance level.

Lag order determined using the Schwartz criterion.

The results reported in Table A1.2 show evidence of one cointegrating vector, suggesting a long term relationship between the real exchange rate, relative prices, real commodity prices, net foreign assets and the fiscal balance taking the following form:

$$REER = 0.27RELP + 1.19NFA + 0.04RELCOM + 0.55DEF$$

As expected, both the relative prices ratio and net foreign assets are positively correlated to the real exchange rate. The magnitude of the coefficients is also roughly consistent with those results of comparable studies in OECD countries⁸⁰: a 1% increase in the relative price ratio (higher non-tradable prices) is associated with a less than proportional real exchange rate appreciation (0.2%) while a 1% increase in net foreign assets is associated with an appreciation of the exchange rate of a little more than 1%. The size of the real commodity prices coefficient is quite small, probably reflecting the fact that only one commodity is present in the index (soy). The sign of the fiscal balance coefficient implies that budget deficits are associated with long run appreciation, which is theoretically consistent under certain conditions, as discussed before. The speed of adjustment between the real exchange rate and its long term equilibrium value, as measured by the error correction term reported in Table A1.2, is of 0.17, implying that that about 20% of the gap is eliminated every quarter and that full adjustment takes place

⁷⁹ See CAHSIN, CESPEDDES & SAHAY [2002].

⁸⁰ See ALBERLOLA *et al.* [1999].

within six quarters in the absence of other shocks). This seems to be relatively fast, and would imply the existence of large deviations. Given the different shocks which hit Argentina in the 1990s, this assumption is certainly plausible.

Table A1.2. Johansen Cointegration Tests

Eigenvalue <i>Lag order=3</i>	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.354217	70.36348	59.46	66.52	None **
0.258360	38.44123	39.89	45.58	At most 1
0.142887	16.62216	24.31	29.75	At most 2
0.060873	5.366578	12.53	16.31	At most 3
0.010653	0.781850	3.84	6.51	At most 4

(**) denotes rejection of the hypothesis at 5%(1%) significance level

Table A1.3. Normalized Cointegrating Coefficients*

Standardized eigenvector '	REER	RELP	NFA	DEF	RELCOM
<i>Lag order=3</i>	1	-0.279233	-1.194019	-0.546936	-0.042169
	Std Error	0.04548	0.12975	0.15750	0.00365
ECM Representation	D(REER)				
CointEq1	0.172379				
<i>Std error</i>	0.06680				
<i>T-Ratio</i>	(2.58068)				
D(REER(-1))	-0.368866				
<i>Std error</i>	0.16004				
<i>T-Ratio</i>	(-2.30483)				
D(REER(-3))	-0.300675				
<i>Std error</i>	0.14857				
<i>T-Ratio</i>	(2.02377)				
D(DEF(-1))	0.079465				
<i>Std error</i>	0.03455				
<i>T-Ratio</i>	(2.29982)				
<i>R-squared</i>	0.303702				
<i>Adj. R-squared</i>	0.120465				

(*)Only statistically significant lagged difference terms are reported in the interest of space

Using the long-term cointegrating vector as well as the short run deviations of the ECM representation reported in the above table, the real exchange rate can be decomposed into permanent and transitory components, following GONZALO & GRANGER[1995], thereby combining I(1) and I(0) elements. As can be seen from Chart A1.1, which plots the actual real exchange rate as well as its theoretical long-run value taking into account short-deviations, the equilibrium exchange rate exhibited significant variations during the 1980s, reflecting erratic economic policy and external shocks. During the 1990s (Chart A1.1b), the most notable deviations were around the time of the Mexican crisis as well as during the 1998-2001 period. It is during that last period that the divergence grew, ending

up with a significant overvaluation. The overvaluation implied by the gap between the actual and the equilibrium exchange rate is of 20% at the end of 2001 (Chart A1.2). This appears to be less than the 40-50% suggested by ALBEROLA *et al.* [2003] in the context of a similar exercise conducted with annual data between 1965 and 2001, but this may reflect different model specifications and samples⁸¹.

Chart A1.1. Actual and Equilibrium Real Exchange Rates

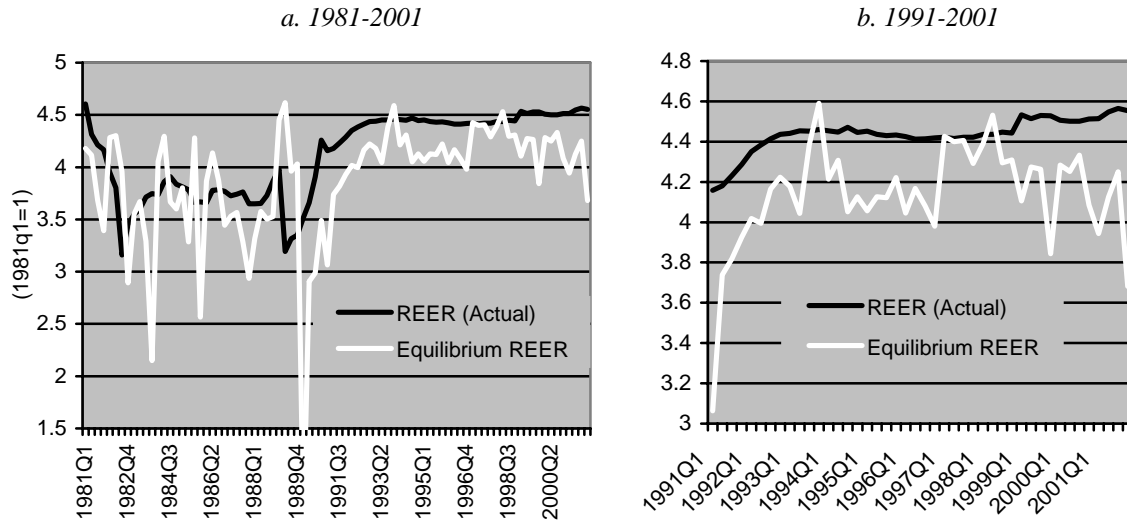
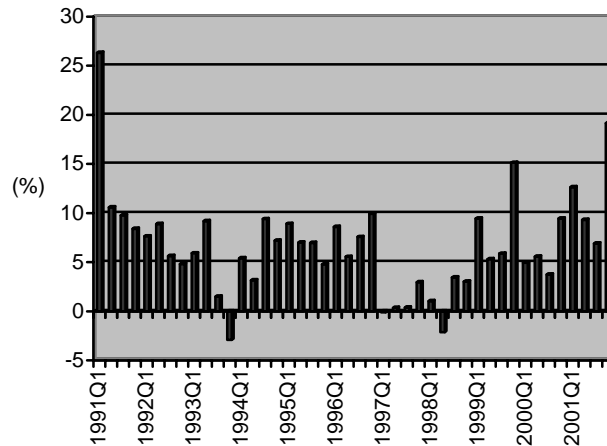


Chart A1.2 Gap between Actual and Equilibrium Exchange Rates (1991-2001)



⁸¹ In particular, the specification used by ALBEROLA *et al.* [2003] does not include real commodity prices and fiscal balance.

Sources: International Financial Statistics, MECON, World Bank Development Indicators

References:

ALBEROLA, E., LOPEZ, H., SERVÉN, L., "Tango with the Gringo: The Hard Peg and Real Misalignment in Argentina", The World Bank, *Mimeo* , April 2003.

ALBEROLA, E., CERVERO, S., LOPEZ, H., UBIDE, A., "Global Equilibrium Exchange Rates: Euro, Dollar, "Ins", "Outs" and Other Major Currencies in a Panel Cointegration Framework", *IMF Working Paper WP/99/175*, December 1999.

CAHSIN, P., CÉSPEDES, L., SAHAY, R., "Keynes, Cocoa and Copper: In Search of Commodity Currencies", *IMF Working Paper WP/02/223*, December 2002.

GONZALO, J., GRANGER, C., "Estimation of Common Long-Memory Components in Cointegrated Systems", *Journal of Business and Economic Statistics*, Vol.13, 1995, pp.27-35.

MACDONALD, R., RICCI, L., "Estimation of the Equilibrium Exchange Rate for South Africa", *IMF Working Paper WP/03/44*, March 2003.

ROGOFF, K., "The Purchasing Power Parity Puzzle", *Journal of Economic Literature*, Vol.24, June 1996, pp.647-68.

ANNEX II

Debt sustainability analysis

Following HINH T. DINH [1999], let us define fiscal sustainability as the one-condition such that solvency can be assured in the future. The budget constraint of the public sector is as follows:

$$D + R \cdot B + ER^* B^* = \dot{B} + E \dot{B}^* + \dot{M} \quad (1)$$

Where

- D is the primary fiscal deficit
- R is the nominal interest rate paid on domestic debt
- R* is the nominal interest rates paid on foreign debt
- B is the public sector's domestic debt and B* is the public sector's foreign debt
- E is the nominal exchange rate
- M is the monetary base
- $\Delta x = x_t - x_{t-1}$

Expressing equation (1) in real terms and rearranging yields equation (2):

$$d + b(r - \pi) + b^* \left(R^* - \pi^* + \frac{\dot{e}}{e} \right) = \dot{b} + \dot{b}^* + m \left(\pi + \frac{\dot{y}}{y} \right) \quad (2)$$

Where $\frac{\dot{X}}{P} = \dot{x} + \pi x$, π depicting the rate of inflation and y the real GDP

Note that the last term of the equation comes from the standard quantity theory of money, assuming that velocity is constant.

Defining i as the real domestic interest rate and i* as the real foreign interest rate, and dividing (2) by real output yields equation (3):

$$\frac{d}{y} + i \frac{b}{y} + \frac{b^*}{y} \left(i^* + \frac{\dot{e}}{e} \right) = \frac{\dot{b}}{y} + \frac{\dot{b}^*}{y} + \frac{m}{y} \left(\pi + \frac{\dot{y}}{y} \right) \quad (3)$$

Let's define $\delta = \frac{b}{y}$ and $\phi = \frac{b^*}{x}$, x denoting real exports. Then, $\frac{\dot{b}^*}{y} = \frac{x}{y} \left(\dot{\phi} + \phi \frac{\dot{x}}{x} \right)$.

Solving for the ratio of deficit to GDP yields equation (4):

$$\frac{d}{y} = \dot{\delta} + \dot{\phi} \frac{x}{y} + \delta \left(\frac{\dot{y}}{y} - i \right) + \frac{x}{y} \phi \left(\frac{\dot{x}}{x} - \frac{\dot{e}}{e} - i^* \right) + \frac{m}{y} \left(\pi + \frac{\dot{y}}{y} \right) \quad (4)$$

Defining the public sector sustainability criterion as $\dot{\delta} = \dot{\phi} = 0$, equation (4) can be reformulated as (4)', which shows that the primary deficit could be financed in a sustainable way either if growth is greater than the interest rate paid on domestic debt, or if export growth exceeds depreciation adjusted foreign interest rates, or in using the inflation tax (the unique revenue-maximizing rate of inflation being equal to the inverse of the semi-elasticity of the demand for money).

$$\frac{d}{y} = \delta \left(\frac{\dot{y}}{y} - i \right) + \frac{x}{y} \phi \left(\frac{\dot{x}}{x} - \frac{\dot{e}}{e} - i^* \right) + \frac{m}{y} \left(\pi + \frac{\dot{y}}{y} \right) \quad (4)'$$

In the specific case of Argentina under the Convertibility Plan, equation (4)' can be further streamlined by eliminating the rate of depreciation of the exchange rate, and by treating the last term of the equation as marginal given the absence of possible use of the inflation tax. Thus, the necessary primary surplus compatible with debt sustainability at a given point in time is given by equation (5):

$$\frac{d}{y} = \frac{b}{y} \left(\frac{\dot{y}}{y} - i \right) + \frac{b^*}{y} \left(\frac{\dot{x}}{x} - i^* \right) \quad (5)$$

A discrete time approximation of equation (5) can be given by equation (6):

$$\left(\frac{d}{y} \right)_t = \left(\frac{b}{y} \right)_{t-1} \cdot \left(\frac{\frac{\Delta y}{y_{t-1}} - i_t}{1 + \frac{\Delta y}{y_{t-1}}} \right) + \left(\frac{b^*}{y} \right)_{t-1} \cdot \left(\frac{\frac{\Delta x}{x_{t-1}} - i_t^*}{1 + \frac{\Delta x}{x_{t-1}}} \right) \quad (6)$$

References:

HINH T. DINH, "Fiscal solvency and Sustainability in Economic Management", The World Bank, *Mimeo*, 1999.